

3.3.1: Number of research papers published per teacher in the Journals notified on UGC care list during the last five years

Name of the Author/s	Department of the Teacher	Name of the Journal	Year of Publication	ISSN Number	Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list
Dr G Sivaiah	Mathematics	International journal of fluid mechanics and research	2017	0970-6577	https://www.begellhouse.com/journals/fluid-mechanics-research.html	DOI:10.5958-2320-3226.2017.00034.0	Yes
Dr G CHANDRA SEKHAR	Chemistry	IJESRT	2017	2277-9655	http://www.ijesrt.com/index.html	DOI: 10.5281/zenodo.839192	Yes
Dr G CHANDRA SEKHAR	Chemistry	IJESRT	2017	2277-9655	http://www.ijesrt.com/index.html	DOI: 10.5281/zenodo.801259	Yes
Dr G CHANDRA SEKHAR	Chemistry	IJESRT	2017	2277-9655	http://www.ijesrt.com/index.html	DOI: 10.5281/zenodo.573530	Yes
Sri P Sivarami Reddy	Physics	Science	2017	0973-1628	http://www.researchlink.in	Research link-160, vol-XVI(5), July 2017, page no:17-18	Yes
P Sivarami Reddy	Physics	CONTEMPORARY RESEARCH IN INDIA	2017	2231-2137	http://www.contemporaryresearchindia.net/	Vol:7 issue 2, page no's:327-330,2017	Yes
Sri S Nagendra	English	Language in India	2018	1930-2940	http://www.languageinindia.com/	http://www.languageinindia.com/june2018/sudhapoeticalsketchsarojininaidu.html	Yes
Dr G CHANDRA SEKHAR	Chemistry	IJESRT	2018	2277-9655	http://www.ijesrt.com/index.html	DOI:10.5281/zenodo.1206987	Yes
Sri S Nagendra	English	Language in India	2018	1930-2940	http://www.languageinindia.com/	http://www.languageinindia.com/july2018/nagendrapoetofnaturesarojini.html	Yes
Dr L Bhushan Kumar	Physics	International Journal of Nanoscience and Technology	2018	2455-0191	https://www.ijnnonline.net/	https://doi.org/10.30799/inst.sp201.18040205	Yes
Dr C Ramana Reddy	Political Science	International journal of emerging technologies and innovatives researches	2018	2349-5162	https://www.jetir.org/?qclid=EALalQobChMlz6LoydHFgQMVSnerCh1hlAKmEAAAYASAAEqJWRPD_BwE	http://www.jetir.org/view?paper=JETIR1812189	Yes
Dr G CHANDRA SEKHAR	Chemistry	Journal of Emerging Technologies and Innovative Research	2019	2349-5162	https://www.jetir.org/?qclid=EALalQobChMlz6LoydHFgQMVSnerCh1hlAKmEAAAYASAAEqJWRPD_BwE	https://www.jetir.org/view?paper=JETIR1904L21	Yes
Dr G CHANDRA SEKHAR	Chemistry	Compliance Engineering Journal	2019	0898-3577	https://ijcenq.com/	DOI:16.10089.CEJ.2019.V10I12.285311.2788	Yes
Dr G CHANDRA SEKHAR	Chemistry	Asian Journal of Research in Chemistry and Pharmaceutical Sciences	2019	2349-7106	www.ajrcps.com/article/PHASE%20EQUILIBRIA%20FOR%20BINARY%20MIXTURES%20OF%20NONANE%20WITH%20OCTANE%20AND%20OCTANE%20WITH%20ORTHOXYLSciences.7(1),2019,114	www.ajrcps.com/article/PHASE%20EQUILIBRIA%20FOR%20BINARY%20MIXTURES%20OF%20NONANE%20WITH%20OCTANE%20AND%20OCTANE%20WITH%20ORTHOXYLSciences.7(1),2019,114	Yes
Sri G Sivaiah	Maths	International Journal of Fluid Mechanics Research	2019	2152-5110	https://www.dl.begellhouse.com/journals/71cb29ca5b40f8f8.html	https://www.dl.begellhouse.com/journals/71cb29ca5b40f8f8.075354f82a6f0e6f.5b78fdd250a5082e.html#	Yes
Dr C Ramana Reddy	Political Science	International journal of emerging technologies and innovative research	2019	2349-5162	https://jetir.org/?qclid=EALalQobChMl_djb9dfFgQMv0IVLBR2SDAFyEAYASAAEqLkdfD_BwE	http://www.jetir.org/view?paper=JETIR1907240	Yes
Dr C Ramana Reddy	Political Science	International journal of emerging technologies and innovative research	2019	2349-5162	https://jetir.org/?qclid=EALalQobChMl_djb9dfFgQMv0IVLBR2SDAFyEAYASAAEqLkdfD_BwE	http://www.jetir.org/view?paper=JETIR2009193	Yes

Dr G CHANDRA SEKHAR	Chemistry	Asian Journal of Research in Chemistry and Pharmaceutical Sciences	2019	2349-7106	Asian Journal of Research in Chemistry and Pharmaceutical Sciences 7(1), 2019,305-314	http://www.ajrcps.com/article/PHASE%20EQUILIBRIA%20FOR%20BINARY%20MIXTURES%20OF%20NONANE%20WITH%20OCTANE%20AND%20OCTANE%20WITH%20ORTHOXYLENE.%20METAXYLENE%20AT%20101.3%20KPA.pdf	Yes
Dr G CHANDRA SEKHAR	Chemistry	Journal of applicable Chemistry	2019	2278-1862	www.joac.info	http://www.joac.info/ContentPaper/2019/13-8-2-9-3.pdf	Yes
Dr G CHANDRA SEKHAR	Chemistry	Results in Chemistry	2019	2211-7156	https://www.sciencedirect.com/journal/results-in-chemistry	https://doi.org/10.1016/j.rechem.2019.100005	Yes
Dr SC Sanjeeva Reddy	Telugu	Bhavaveena	2020	2456-4702	https://telugujournalbhavaveena.blogspot.com/2020/	https://drive.google.com/file/d/1OJJ54jP-qKnWFBvg4ww_VFKOdjtxZ034/view	Yes
Dr SC Sanjeeva Reddy	Telugu	Telugu sahityam-samakalinatha	2020	2456-4702	https://telugujournalbhavaveena.blogspot.com/2020/	https://drive.google.com/file/d/1c6Lf3kPg2d7czqx6bECXmCTppivdTxe/view	Yes
Dr SC Sanjeeva Reddy	Telugu	Kanya shulkam natakam - samasya pariskaaram	2020	2456-4702	https://telugujournalbhavaveena.blogspot.com/	https://telugujournalbhavaveena.blogspot.com/2021/05/kvr-gdc-international-seminar-spl-book.html	Yes
Dr C Ramana Reddy	Political Science	International journal of emerging technologies and innovative research	2020	2349-5162	https://www.jetir.org/?qclid=EAlaQobChMlz6LoydHFgQMVSrErCh1hIAKmEAAAYASAAEgJWRPD_BwE	http://www.jetir.org/view?paper=JETIR2011017	Yes
Dr G CHANDRA SEKHAR	Chemistry	GIS Science Journal	2021	1869-9391	https://gisscience.net/	DOI:20.18001.GSJ.2021.V8i5.21.37174	Yes
Sri. A. Venkateswarlu	Mathematics	Nonlinear Engineering,	2021	2192-8029	https://www.degruyter.com/journal/key/nleng/html	https://doi.org/10.1515/nleng-2021-0047	
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Dr G CHANDRA SEKHAR	Chemistry	Chemical Thermodynamics and Thermal Analysis	2022	2667-3126	www.elsevier.com/locate/ctta	https://doi.org/10.1016/j.ctta.2021.100032	Yes
Dr SC Sanjeeva Reddy	Telugu	Neevu emina cheyagalavu	2022	2456-4702	https://telugujournalbhavaveena.blogspot.com/2022/02/	https://drive.google.com/file/d/12JZbSlejlbPiu86rMv9lwCciQ-YY8WuL/view	Yes
Dr L Bhushan Kumar	Physics	International Journal of Materials Today: Proceedings 49 (7) (2022) A1-A6.	2022	2214-7853	https://www.sciencedirect.com/journal/materials-today-proceedings	http://dx.doi.org/10.1016/j.matpr.2021.12.554	Yes
Dr L Bhushan Kumar	Physics	International Journal of Applied Physics A Materials Science & Processing	2022	0947-8396	https://www.springer.com/journal/339	http://dx.doi.org/10.1007/s00339-022-05406-2	Yes



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Dr G CHANDRA SEKHAR	Chemistry	Journal of Emerging Technologies and Innovative Research	2019	2349-5162	https://www.ijetir.org/?qclid=EA1A1Qo_bChMiz6LoydHFGQMVSnECh1hIAk_mEAAyASAAEgJWRPD_BWE	https://www.ijetir.org/view?paper=JETIR190412	Yes
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Dr C Ramana Reddy	Political Science	International Journal of emerging technologies and innovative research	2019	2349-5162	https://www.ijetir.org/?qclid=EA1A1Qo_bChMiz6LoydHFGQMVSnECh1hIAk_mEAAyASAAEgJWRPD_BWE	http://www.ijetir.org/view?paper=JETIR1907240	Yes
Dr C Ramana Reddy	Political Science	International Journal of emerging technologies and innovative research	2019	2349-5162	https://www.ijetir.org/?qclid=EA1A1Qo_bChMiz6LoydHFGQMVSnECh1hIAk_mEAAyASAAEgJWRPD_BWE	http://www.ijetir.org/view?paper=JETIR2009193	Yes



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Dr G CHANDRA SEKHAR	Chemistry	Asian Journal of Research in Chemistry and Pharmaceutical Sciences	2019	2349-7106	Asian Journal of Research in Chemistry and Pharmaceutical Sciences 7(1), 2019, 305-314	http://www.aajournals.com/article/PHASE%20EQUILIBRIA%20FOR%20BINARY%20MIXTURES%20OF%20NONANONE%20WITH%20OCTANE%20AND%20OCTANE%20WITH%20ORTHOXYLENE%20METAXYLENE%20AT%20101.3%20KPA.pdf	Yes
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Dr SC Sanjeeva Reddy	Telugu	Telugu sahityam- sanakalinatha	2020	2456-4702	https://telugujournalbhavaveena.blogspot.com/2020/	https://telugujournalbhavaveena.blogspot.com/2021/05/ky-gdc-international-seminar-spl-book.html	Yes
Dr SC Sanjeeva Reddy	Telugu	Kanya shukam natakam - sanasya pariskaram	2020	2456-4702	https://telugujournalbhavaveena.blogspot.com/	http://www.jeitr.org/view?paper=JETIR2011017	Yes
Dr C Ramana Reddy	Political Science	International Journal of emerging technologies and innovative research	2020	2349-5162	https://www.jeitr.org/?qclid=EALiQo_bChMiz6LoydHFGOMVSnEChIAK_mEAAVYASAAEgJWRPD_BwE	https://doi.org/10.18001/GSJ.2021.V8I5.21.37174	Yes
Dr G CHANDRA SEKHAR	Chemistry	GIS Science Journal	2021	1869-9391	https://www.degruyter.com/journal/kyinlang/html	https://doi.org/10.1515/nlang-2021-0047	Yes
Sri. A. Venkateswarlu	Mathematics	Nonlinear Engineering,	2021	2192-8029	https://www.jeitr.org/?qclid=EALiQo_bChMiz6LoydHFGOMVSnEChIAK_mEAAVYASAAEgJWRPD_BwE	http://www.jeitr.org/view?paper=JETIR2107118	Yes
Dr C Ramana Reddy	Political Science	International Journal of emerging technologies and innovative research	2021	2349-5162	https://www.jeitr.org/?qclid=EALiQo_bChMiz6LoydHFGOMVSnEChIAK_mEAAVYASAAEgJWRPD_BwE	https://doi.org/10.1016/j.cta.2021.100032	Yes
Dr G CHANDRA SEKHAR	Chemistry	Chemical Thermodynamics and Thermal Analysis	2022	2667-3126	www.eisvier.com/locate/cta	https://drive.google.com/file/d/1JZ6SleibPhu86mM9IwCQO_VY8WU/view	Yes
Dr SC Sanjeeva Reddy	Telugu	Neevu emina cheyagalavu	2022	2456-4702	https://telugujournalbhavaveena.blogspot.com/2022/02/		Yes
Dr L Bhushan Kumar	Physics	International Journal of Materials Today: Proceedings 49 (7) (2022) A1-A6.	2022	2214-7853	https://www.sciencedirect.com/journal/materials-today-proceedings	http://dx.doi.org/10.1016/j.matpr.2021.12.554	Yes
Dr L Bhushan Kumar	Physics	International Journal of Applied Physics A Materials Science & Processing	2022	0947-8396	https://www.springer.com/journal/339	http://dx.doi.org/10.1007/s00339-022-05406-2	Yes



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MHD DOUBLE DIFFUSIVE FLUID FLOW THROUGH A ROTATING POROUS PLATE WITH CHEMICAL REACTION

G. Sivalah*, K. Jayaram Reddy**

Author Affiliation:

*Research Scholar, Department of Mathematics, Rayalaseema Univesity, Kurnool-518002, (A.P.), India.

E-mail: sivaiahgunti@gmail.com

**Department of Mathematics, K. L. University, Vaddeswaram, Guntur-522502, A.P. India.

E-mail: drkjreddy73@kluniversity.in

Corresponding Author:

G. Sivalah, Research Scholar, Department of Mathematics, Rayalaseema Univesity, Kurnool-518002, (A.P.), India.

E-mail: sivaiahgunti@gmail.com

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Abstract

An attempt has been made to analyze the characteristics of MHD rotating double diffusive and chemically reactive fluid flow past a vertical porous plate with thermal radiation and heat generation. The non-dimensional governing equations involved in the present analysis are solved by using finite difference technique. The effects of various physical parameters on velocity, temperature and concentration along with skin friction, the rate of heat transfer in the form of Nusselt number and the rate of mass transfer in the form of Sherwood number are studied through the graphs and tables.

Keywords: Double diffusion, Chemical reaction, MHD, Rotating fluid, Thermal radiation, Porous plate, Heat generation.

1. INTRODUCTION

Simultaneous heat and mass transfer from different geometries embedded in porous medium has many Engineering and Geophysical applications such as geothermal reservoirs, drying of porous solids, thermal insulation, enhanced oil recovery, packed bed catalytic reactors, cooling of nuclear reactors, and underground energy transport. The science of magneto hydrodynamics (MHD) was concerned with geophysical and astrophysical problem for a number of years. In recent years, the possible use of MHD is to affect a flow stream of an electrically conducting fluid for the purpose of thermal protection, braking, propulsion and control. From the point of applications, model studies on the effect of magnetic field on the convection flow have been made by several investigators. From technological point of view, MHD convection flow problems are also very significant in the field of stellar and planetary magnetospheres, aeronautics, chemical engineering and electronics. Model studies of the above phenomena of MHD convection have been made by many.



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Persistence of Vision for Alphabet Recognition

Technology is growing by the day, and its advancement in the field of visual display has been phenomenal as well. This paper deals with one of several phenomena dealing with visual display called the Persistence of Vision Display (POV). Persistence of vision refers to the phenomenon of the human eye in which the afterimage exists for a brief time (10 ms). A POV display uses this same phenomenon by spinning a one dimensional array of LEDs through two dimensional space at such a speed that a two dimensional cylindrical display is visible. This movement is achieved by placing the LEDs on a motor shaft. The rotational speed is so maintained that the human eye perceives a two dimensional image. Rather than display a monotonous stream of letters we have established a link between an alphabet recognition system and the display system using a ZigBee. At the transmitter end, i.e., the alphabet recognition end, a set of four switches are placed which aid in the incrementing and decrementing of the letters of the alphabet, incrementing the cursor to the next position and sending the set string of data through ZigBee. The transmitting section uses an AT89S52 for recognizing the alphabet and transmitting it. The receiver section of ZigBee receives this string of data and displays it on the rotating LEDs. On the receiver end we use an AT89C2051 microcontroller which has an inbuilt LED driver to reduce the weight and space on the module.

Key Words : Persistence, Vision, ZigBee, Microcontroller, One and two dimensional image.

P. SIVA RAMI REDDY* & I.V. SUBBA REDDY**

(1) Introduction :

The core idea of the project revolves around the single phenomenon of persistence of vision. Persistence of vision is a phenomenon pertaining to the ability of the eye, where the afterimage seen continues to exist in the retina for a certain period of time (approx. 10ms). Many people have proposed methods using multiplexers, shifters, timers, microcontrollers, etc. to exhibit this phenomenon. This work enables a display of text of desired length at a low cost and high efficiency.

In the paper [1] a PIC microcontroller is used along with latches which are used for multiplexing the signal. The display is obtained on an LED array. This type of display has the option of showcasing text or a clock based on choice. The text to be showcased is the same as the text that has been preprogrammed in the microcontroller.

In paper [2] a rotating display is created using an AT89C52 microcontroller along with an RTC (real time clock). This display deals with the showcasing of time and date using the RTC. RTCs are usually used in mobiles or computers or in instruments where a high accuracy of time keeping is required. So, in this display the RTC is used to keep the time and day up-to-date. Every time the display is turned on the date and time at that particular moment is shown. This is achieved by a single column of 8 LEDs

working on the principle of persistence of vision.

The Propeller Clock [3] uses the concept of persistence of vision to display a live clock. The paper makes a case for creating a circular display instead of the conventional cylindrical display. An optocoupler is used to provide interrupts to the microcontroller. An AT89C2051 microcontroller is used to reduce weight of the POV display.

In paper [4], Persistence of vision control is achieved using an Arduino microcontroller. This microcontroller is faster, performs better and is more efficient. The whole kit works with an android operating system. Instead of using the conventional single color LEDs, an RGB LED is used here, which emits three colors. The display of the message is governed by any android device connected to the Arduino board.

The spinning LED display using radio frequency takes the concept of rotating displays using a single column of LEDs a step further. In paper [5], the users are operating a preprogrammed AT89S52 microcontroller, i.e., the message to be displayed is already dumped into the microcontroller. They also have the option of changing the message by simply reprogramming the microcontroller or establishing a communication link between the display and a PC using RF frequencies. This link enables the user to send a stream of data to be displayed from the PC.

*Department of Physics, SCNR Govt. Degree College, Proddatur, Kadapa, (Andhra Pradesh)

**Department of Physics, GITAM University, Hyderabad Campus, Rudraram, Sangareddy (Telangan)

(2) Proposed Work :

Energy crisis is one of the most acute problems concerning the world today. Saving power should be of the highest priority on everyone's agenda. But the way the world is growing, it is encouraging the rise of new industries and entertainment and amusement zones. These industries and amusement parks require the installation of display units which consume a lot of power. This work shows how by using a single column of LEDs to make display units, we can reduce our increasing consumption of power. These units can display any message using transmitter boards.

(3) Components :

The following are the components used in this system:

(I) Microcontroller :

This system uses two microcontrollers:

(i) AT89S52 : The heart of our transmitter section is the AT89S52. The 8 bit microcontroller has 8K of in-system programmable flash memory and 256 bytes of RAM. The microcontroller has 32 I/O lines. The microcontroller also houses a full duplex serial communication port and a set of three 16bit timers/counters. The microcontroller works on two modes, an idle mode and a power down mode.

(ii) AT89C2051 : In our receiver section we are using the AT89C2051 microcontroller. This 8 bit microcontroller has 2K of in-system programmable flash memory and 128x8 bytes of RAM. The microcontroller has 15 I/O lines. It has a programmable serial communication port. The microcontroller has direct LED drive output lines.

(II) Liquid Crystal Display (LCD) :

The LCD connected to the microcontroller is a 16x2 display. With the LCD, if an 8bit data bus is used, then the LCD will require 11 data lines (3 control lines and 8 lines for the data bus). These three control lines are referred to as EN (Enable), RS (Register select), and RW (Read/Write). The Enable pin is used to tell the LCD that we are sending the data. If the Register Select pin is low it means that the data is treated as a command and if it is high then the data sent is text. If the Read/Write pin is low it means that the data is written and if it is high, the data is read, provided the register select pin is high.

(III) ZigBee :

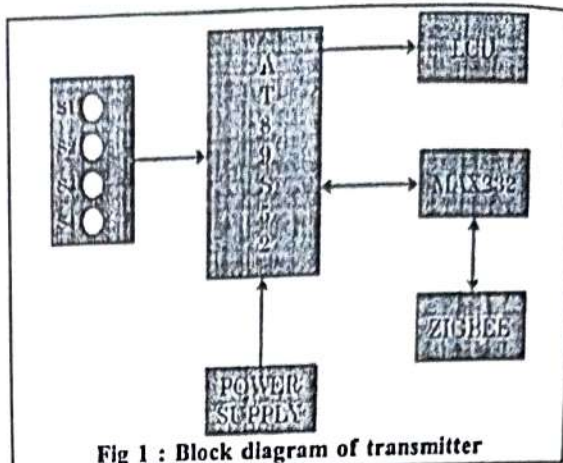
ZigBee is a transceiver module which communicates using the RF frequencies. It transmits and receives data at 9600 baud rates from any CMOS/TTL source. It works in half duplex mode, i.e., the data can be sent only in one direction at a time. ZigBee is a low-power and low-cost communication module.

(IV) MAX 232 :

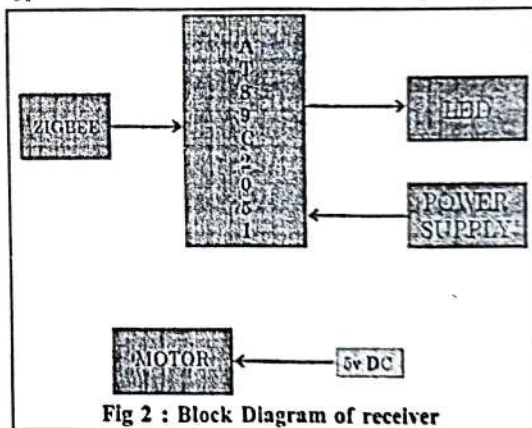
MAX 232 chips are used to convert the given voltages to RS 232 communication standards. MAX 232 is also referred to as a line driver. It works on the principle of charge pumping. This IC is the best at noise rejection and is also very reliable against discharges and short circuits.

(4) Implementation :

The block diagram 1 shows the transmitter section of



the module. The heart of this transmitter circuit is the AT89S52 microcontroller. In the transmitter section there are four switches S1, S2, S3, S4. S1 is used for incrementing the alphabet, S2 for decrementing the alphabet, S3 is used for incrementing the cursor to the next position, and S4 is used for transmitting the data serially using ZigBee. The desired string is typed using the switches (S1, S2, and S3). The LCD connected to the module will help the user see what has been typed. Once the desired string has been typed it can be transmitted by pressing S4. Max 232 now converts the string into RS 232 compatible standards and transmits the typed text to the receiver section with the help of ZigBee.



The above block diagram shows the receiver section of the module. The heart of the receiver circuit is the AT89C2051 microcontroller. This microcontroller is used because it has the capability of directly driving the LEDs, therefore LED driver chips need not be used. This reduces the weight of the module. The ZigBee on the receiver section receives the data and sends it to the microcontroller. Based on the data received, the microcontroller either switches the LED on or off for the specified period of time. This setup is mounted on a motor. When the motor is switched on, the module starts rotating at a calculated number of rotations per minute. The single column of LEDs rotating in a cylindrical column displays the entered string.

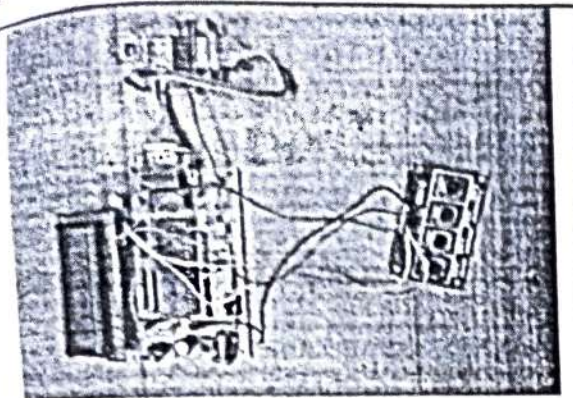


Fig 3 : Prototype development board (Transmitter)

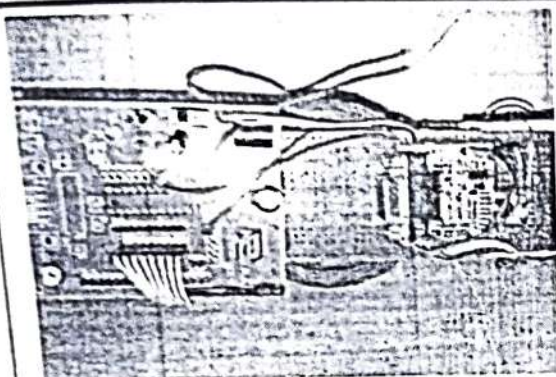


Fig 4: Prototype development board (Receiver) top view

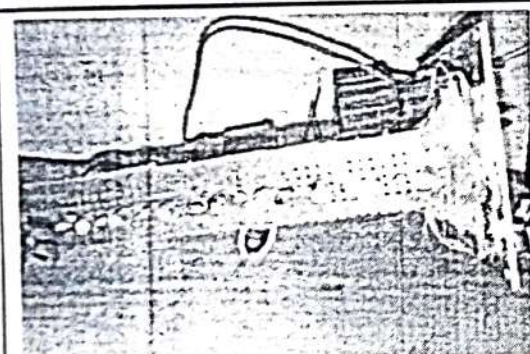


Fig 5 : Prototype development board (Receiver) Front view

(5) Software :

Initially, in the transmitter section, the LCD and serial ports are reset for initialization. A message "WELCOME" is displayed on the LCD screen. The microcontroller then redirects the LCD to a blank screen which displays a cursor and the letter 'A'. The LCD then awaits the next command. If S1 (switch 1) is pressed on the kit an increment of characters occurs until the desired character is obtained. Once the desired character is obtained, S3 (Switch 3) should be pressed for the cursor to move to the next position on the LCD. In the same manner S2 (switch 2) is used to decrement the alphabet count. Once the desired string of data is set on the LCD, S4 (switch 4) should be pressed which transmits the string of data using a ZigBee.

In the receiver section, initially the serial and timer registers are reset. The ports to which the LEDs are connected are also reset. By doing this the serial timer registers and the LED ports are initialized. The microcontroller now checks if there is any data being received at the ZigBee. If there is data being received, the microcontroller checks which character is being received. Based on the character received an appropriate time delay is created for the LED to be ON or OFF. If there is no data being received a preprogrammed message saying "HELLO" is displayed on the LED array.

(6) Applications : The advantage of the present work is that it consumes much less power than the display units in use in the market now. This work enables the user to display a desired string rather than a monotonous string. This work is also light to carry around. The user doesn't require a PC or a programmer to reframe the display message. All that the user needs is a transmitter board.

Conclusion : Energy efficiency is a growing demand in today's world and so is modernization with technology. This work combines both by creating a user friendly display at low cost with high efficiency and low power consumption.

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ABSTRACT

A simple, economic, selective, precise, and accurate High Performance liquid Chromatographic method for the analysis of Nitrofurantoin in bulk drug and pharmaceutical formulations was developed and validated in the present study. The mobile phase consists of a mixture of Acetonitrile and buffer 88:12. And adjust the pH to 5.0 ± 0.05 with sodium hydroxide solution. This was found to give a sharp peak of Nitrofurantoin at a retention time of 8.423 min. HPLC analysis of Nitrofurantoin was carried out at a wavelength of 254 nm with a flow rate of 1.6 mL/min. The linear regression analysis data for the calibration curve showed a good linear relationship with a regression coefficient of 0.999 in the concentration range of 50 to 150 $\mu\text{g mL}^{-1}$. The linear regression equation was $y = 53.412x - 168.06$. The developed method was employed with a high degree of precision and accuracy for the analysis of Nitrofurantoin. The developed method was validated for accuracy, precision, robustness, detection and quantification limits as per the ICH guidelines. The wide linearity range, accuracy, sensitivity, short retention time and composition of the mobile phase indicated that this method is better for the quantification of Nitrofurantoin.

KEYWORDS: Nitrofurantoin, HPLC, Validation.

INTRODUCTION

Several materials have been tested toward this aim, including solid amalgam electrodes (SAE), carbon paste electrodes (CPE), nanotube carbon paste electrodes (NTCPE), glassy carbon electrodes (GCE), solid composite electrodes (SCE) and boron-doped diamond film electrodes (BDDFE). Several reviews illustrating the use of these materials in the electroanalytical field have been published in recent years [1], [2], [3], [4], [5], [6], [7], [8], [9], [10] and [11].

Among these materials, BDDFE has attracted the attention of electroanalytical researchers as a candidate for the electrochemical determination of pharmaceutical compounds, since BDDFE presents a stable background current, wide potential window for aqueous and non-aqueous electrolytes, high thermal conductivity, high hardness, high electrochemical stability, low organic molecule adsorption and high sensitivity for analytical purposes [5], [8], [9], [12], [13] and [14].

However, little attention has been given in the literature concerning the influence of different boron-doping levels on the electrochemical response of the pharmaceutical compounds. In addition, some reports have been published showing that nitrofurantoin, which is in the group of nitrofurantoin antibacterial agents, has a good electrochemical response on the BDDFE [15] and [16]. This enables the application of this electrode for the electrochemical detection and quantification of compounds belonging to the nitrofurantoin group. Among them, nitrofurantoin (NFT; 1-(5-nitro-2-furfurylidene)-1-amino)hydantoin] is a drug synthesized from nitrofurantoin that is very useful in the treatment of urinary tract diseases. Depending on its concentration at the inflammation site, this drug may act as a bacteriostatic or bactericidal agent [17]. As pointed out by Hanuman [17], this drug can act against various gram negative bacteria as well as some gram-positive bacteria, including *Citrobacter*, *Corynebacterium*, *Enterobacter*, *Escherichia coli*, *Klebsiella*, *Neisseria*, *Salmonella*, *Staphylococcus aureus* and *Enterococcus faecalis*. It is efficient against these bacteria in the concentration range of 1–32 $\mu\text{g mL}^{-1}$. However, this drug is partially metabolized, and 24 h after the application of a single oral dose, 30–

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**SPECTROPHOTOMETRIC DETERMINATION OF METALAZONE AND IN ITS
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B. Satyanarayanaa*, G. Chandra Sekhar, P. Sugunaa
SGS Arts college, TTD, Tirupati, A.P, India
Govt. degree & PG college, Puttur, A.P, India

DOI: 10.5281/zenodo.801259

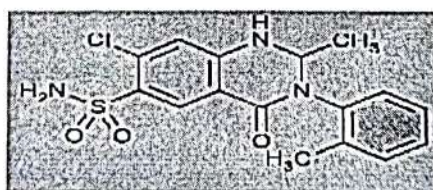
ABSTRACT

A simple, precise, rapid sensitive and accurate spectro photometric methods have been developed for the estimation of Metalazone in pure form and its formulations and Spiked vegetables and water samples. This method is based on complex formation of Metalazone with 2,2-BP in the presence of Ferric chloride to form coloured product with maximum of 620 nm. The product obeyed Beer's law in the concentration range 0.4–2.4 ml (4–24 µgml⁻¹) with molar absorptivity of 0.4029×10^4 . Sandells sensitivity 0.00945. The assay of results was found to be good agreement with label claim.

KEYWORDS: Metalazone. UV. Validation.

INTRODUCTION

Metolazone is chemically 7-chloro-2-methyl-3-(2-methylphenyl)-4-oxo-1, 2-dihydroquinazoline- 6-sulfonamide [3] (Structure-1). Metolazone is an oral diuretic drug, commonly classified with the thiazide diuretics. It is primarily used to treat congestive heart failure and high blood pressure. Metolazone indirectly decreases the amount of water reabsorbed into the bloodstream by the Kidney, so that blood volume decreases and urine volume increases. This lowers blood pressure and prevents excess fluid accumulation in heart failure. The empirical formula for Metolazone is C₁₆H₁₆ClN₃O₃S and the molecular weight is 365.84 grams.



Metolazone (Structure-1)

Literature review reveals that methods have been reported for analysis of Metolazone. Ultra-Violet and Derivative spectrophotometric methods for estimation of Metolazone in pharmaceuticals ^{2&3-8}. A Validated UV spectrophotometric method of Metolazone in Bulk and its Tablet Dosage forms ^{3&9-11}. Validated RP-HPLC method for simultaneous quantitation of Losartan potassium and Metolazone in bulk drug and formulation ^{4&12-17}. Validated HPTLC Method for Simultaneous Estimation of Ramipril and Metolazone in Bulk Drug and formulation ^{1&18-21}. LC-MS-MS development and validation for simultaneous quantitation of Metolazone with other drug in human plasma.

There is however no reported HPLC and UV- Visible spectrophotometric method for the analysis of Metolazone in its technical grade and formulations. This chapter describes a validated HPLC and UV-Visible spectrophotometric methods for the quantitative determination of Metolazone Functional group used for color development of Metolazone was primary amine group. The results obtained in this method was based on reaction of Metolazone with complex formation with 2, 2- Dipyridine/ Ferric chloride. An attempt has been made to develop and validate all methods to ensure their accuracy, precision, repeatability, reproducibility and other analytical method validation parameters as mentioned in the various guidelines.

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COMMERCIAL FORMULATIONSG.Chandra Sekhar¹, B.Sathyanarayana² & P.Suguna³¹Department of Chemistry, Govt. degree & PG College, Puttur(A.P)^{2,3}Department of Chemistry, SGS Arts College, Tirupati(A.P)

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ABSTRACT

A simple, precise, rapid sensitive and accurate spectrophotometric methods have been developed for the estimation of Ametrudione in pure form and its formulations and Spiked vegetables and water samples. This method is based on oxidative coupling of Ametrudione with MBTH in the presence of Ferric chloride to form green colored product with Maximum of 615nm. The product obeyed Beer's law in the concentration range 0.5-3 ml (5-30 µgml⁻¹) with molar absorptivity of 1.001×10^4 . Sandel's sensitivity 0.004945. The assay of results was found to be in good agreement with label claim.

Keywords: Ametrudione. UV. Validation.

I. INTRODUCTION

A survey of the literature revealed that different analytical techniques for the assay of MTM have been reported. Voltametric detection of the herbicide Ametrudione at a bismuth film electrode in non deaerated solution¹ Electroanalysis of Ametrudione and metribuzen on lignin By Adsorption² Electrochemical reduction of Ametrudione³ Identification of different products obtained by electrochemical and photochemical reduction of the Ametrudione⁴ Voltametric determination of Ametrudione with an electrogenerated molecularly imprinted polymer microsensor⁵ Electrochemical determination of the effect of lead (II) on the photochemical degradation of the pesticide Ametrudione⁶ Voltametric determination of Herbicide Ametrudione using Mercury and silver solid amalgam electrode⁷ Preconcentration and voltametric determination of the herbicide Ametrudione with a silica modified carbon paste electrode⁸ Determination and method validation of Ametrudione in soil by RP-HPLC⁹ Electrochemical determination of the effect of Copper (II) on the photochemical degradation of the pesticide Ametrudione¹⁰.

There is however no reported UV-Visible spectrophotometric method for the analysis of Mitamitron in its technical grade and formulations. This describes a validated UV-visible spectrophotometric method for the quantitative determination of Mitamitron. Functional group used for color development of Mitamitron was primary amine group. The results obtained in this method were based on complex formation reaction of Mitamitron with Oxidative coupling reaction with MBTH / Ferric chloride.

The author has developed UV-Visible spectrophotometric method based on the use of method, without use of any interferences. An attempt has been made to develop and validate all methods to ensure their accuracy, precision, repeatability, reproducibility and other analytical method validation parameters as mentioned in the various guidelines.

This describes a validated UV-Visible method for the quantitative determination of Ametrudione. The empirical formula for Ametrudione is C₁₀H₁₀N₄O and the molecular weight is 202.2 grams. It has the following structure.

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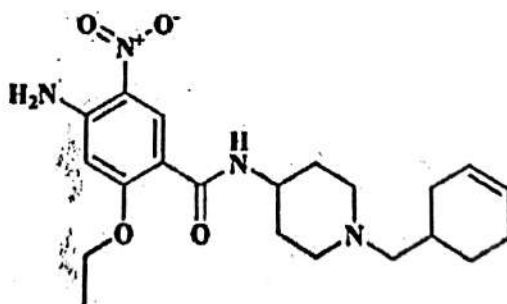
ABSTRACT

The voltammetric performance of cinitapride (CNTP) was investigated at carbon paste electrode using differential pulse voltammetry and cyclic voltammetry. The drug under study exhibited a single, well-defined reduction peak owing to the reduction of NO_2 . The electrode and reaction conditions which yielded maximum peak current were established using differential pulse voltammetry. A linear relationship was observed between the peak current and the concentration of CNTP over the range 2.35×10^{-6} M to 4.25×10^{-4} M. The limits of detection and limits of quantitation were found to be 6.55×10^{-9} M to 7.42×10^{-8} M respectively. The proposed method was successfully applied for the determination of CNTP in pharmaceutical formulations without interference from excipients.

KEYWORDS: cinitapride; differential pulse voltammetry; cyclic voltammetry; Carbon paste electrodes.

I. INTRODUCTION

Cinitapride (CNTP) (Fig.1) is chemically, 4-Amino-N-[1-(3-cyclohexen-1-ylmethyl)-4-piperidinyl]-2-ethoxy-5-nitrobenzamide and a gastroprokinetic drug¹. Regarding cinitapride, the determination of this drug can be accomplished using spectrophotometric methods². Previously few methods are reported such as spectrophotometric^{3,4} and HPLC⁵ methods for determination of cinitapride in pharmaceutical dosage forms. By keeping all this in view, it was thorough worthwhile to develop stability indicating HPLC method. Literature survey reveals some chromatographic and polarographic methods have been used for the determination of CNTP⁶⁻¹⁰. Roy et al. reported RP-HPLC Method for the Determination of Cinitapride in the Presence of its Degradation Products in Bulk Drug¹¹. Hitesh et al. Development and validation of HPTLC method for simultaneous estimation of cinitapride and omeprazole in combined dosage form¹².



Cinitapride (CNTP) (Figure.1)

Carbon paste electrodes (CPEs) belong to promising electrochemical or bioelectrochemical sensors of wide applicability. In 2008, it was exactly a half century since Ralph Norman Adams from the University of Kansas published a short one-page report¹³. The base of modified carbon pastes is usually a mixture of powdered graphite and nonelectrolytic binder¹⁴⁻¹⁶. This work aimed to study the reduction of CNTP at carbon paste

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GEOPHYSICS: AN OVERTURE

P. Sivarami Reddy, Lecturer in Physics, S.C.N.R Govt. Degree College, Proddatur Town, YSR Dist, A.P.

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Abstract: Geophysics is applied to societal needs, such as mineral resources, mitigation of natural hazards and environmental protection. Geophysical survey data are used to analyze potential petroleum reservoirs and mineral deposits, locate groundwater, find archaeological relics, determine the thickness of glaciers and soils, and assess sites for environmental remediation. Geophysics is the science which deals with investigating the Earth's internal structure dynamics, using the methods and techniques of Physics and Mathematics.

Key words: Geophysics, Interdisciplinary physical science, Geology.

Geophysics is an interdisciplinary physical science concerned with the nature of the earth and its environment and as such seeks to apply the knowledge and techniques of physics, mathematics and chemistry to understand the structure and dynamic behavior of the earth and its environment. The required sequence of Mathematics, Physics and Geophysics courses is designed to provide a basic structure on which to build a program with science electives normally selected from Geology, Astronomy, Oceanography, Mathematics, Physics and Chemistry courses.

Geophysics is a subject of natural science concerned with the physical processes and physical properties of the Earth and its surrounding space environment, and the use of quantitative methods for their analysis. The term geophysics sometimes refers only to the geological applications: Earth's shape; its gravitational and magnetic fields; its internal structure and composition; its dynamics and their surface expression in plate tectonics, the generation of magmas, volcanism and rock formation. However, modern geophysics organizations use a broader definition that includes the water cycle including snow and ice; fluid dynamics of the oceans and the atmosphere; electricity and magnetism in the ionosphere and magnetosphere and solar-terrestrial relations; and

analogous problems associated with the Moon and other planets.

Although geophysics was only recognized as a separate discipline in the 19th century, its origins date back to ancient times. The first magnetic compasses were made from lodestones, while more modern magnetic compasses played an important role in the history of navigation. The first seismic instrument was built in 132 BC. Isaac Newton applied his theory of mechanics to the tides and the precession of the equinox; and instruments were developed to measure the Earth's shape, density and gravity field, as well as the components of the water cycle. In the 20th century, geophysical methods were developed for remote exploration of the solid Earth and the ocean, and geophysics played an essential role in the development of the theory of plate tectonics.

Geophysics is applied to societal needs, such as mineral resources, mitigation of natural hazards and environmental protection. Geophysical survey data are used to analyze potential petroleum reservoirs and mineral deposits, locate groundwater, find archaeological relics, determine the thickness of glaciers and soils, and assess sites for environmental remediation.

Geophysics is the science which deals with investigating the Earth's internal structure dynamics,

using the methods and techniques of Physics and Mathematics. The physical properties of earth materials such as density, elasticity, magnetization, and electrical conductivity all allow inference about those materials to be made from measurements of the corresponding physical fields - gravity, seismic waves, magnetic fields, and various kinds of electrical fields. Because Geophysics incorporates the sciences of Physics, Mathematics, Geology it is a truly multidisciplinary physical science.

Definitions:

Geophysics is the application of physics to study of the solid earth. It occupies an important position in earth sciences. It has been taught principally in Earth sciences departments of university. There is an obvious need for it to introduce to engineers and archaeologists much more widely than at present. Geophysics is developed from the disciplines of physics and geology and has no sharp boundaries that distinguish it from either.

The use of physics to study the interior of the Earth, from land surface to the inner core is known as solid earth Geophysics. Solid Earth Geophysics can be subdivided into Global Geophysics or pure Geophysics and Applied Geophysics. 'Global Geophysics' is the study of the whole or substantial parts of the planet. Geophysical methods may be applied to a wide range of investigations from studies of the entire earth to exploration of a localized region of the upper crust, such as plate tectonics, heat flow and paleomagnetism. 'Applied Geophysics' is the study of the Earth's crust and near surface to achieve an economic aim, or making and interpreting measurements of physical properties of the earth to determine subsurface conditions usually with an economic objectives (e.g. discovery of fuel or mineral depositions). Applied Geophysics comprises the following subjects:

1. Determination of the thickness of the crust (which is important in hydrocarbon exploration.
2. Study of shallow structures for engineering site investigations.

3. Exploration for ground water and for minerals and other economic resources.

4. Trying to locate narrow mine shafts or other forms of buried cavities.

5. The mapping of archaeological remains.

6. Locating buried pipes and cables.

Engineering Geophysics: the application of geophysical methods to the investigation of near-surface physico-chemical phenomena which are likely to have (significant) for the management of the local environment.

The discipline of environmental geophysics needs to bring to the attention of policy-makers and planners. The principal distinction between engineering and environmental geophysics is that the former is concerned with structures and types of materials, whereas the latter can also include mapping variations in pore fluid conductivities to indicate pollution plumes within ground water, for examples:

- Geophysics can be used to investigate contaminated land to locate polluted areas prior to direct observations using trial pits and boreholes. Large areas can be surveyed quickly at relatively low cost.
- The alternative and more usual approach is to use a statistical sampling techniques, the geophysical survey is used to locate anomalous areas and there will be a higher certainty that the constructed trial pits and boreholes will yield useful results.
- Geophysics is also being used much more extensively over landfills and other waste repositories.
- Geophysics can be used to locate a corroded steel drum containing toxic chemicals. To probe for it poses the real risk of puncturing it and creating a much more significant pollution incident.
- By using modern geomagnetic surveying methods, the drum's position can be isolated and a careful excavation investigated to remove the offending (hurt) object without damage. Such

approach is cost effective and environmentally safer.

- Geophysics investing of the interior of the earth involve taking measurements at or near the earth's surface that are influenced by the internal distribution of physical properties.
- Analysis of these measurements can reveal how the physical properties of the earth's interior vary vertically and laterally.
- Exploration geophysics developed from the methods used in global geophysics.

History of Geophysics: The beginning of geophysics has been started since: a- Gilbert's discovery which stated that the earth behaves as a great and irregular magnet. b- Newton's theory of gravitation.

- The initial step in the application of geophysics to the search for minerals was taken in 1843 by von warde which used the magnetic theodolite of Lamont to discover magnetic ore bodies.
- In 1879 a book by Robert Thalen was published entitled "on the examination of iron ore deposits by magnetic methods".
- At that time, the first magnetometer called Thalen-Tiberg magnetometer was manufactured in Sweden.
- During the past seventy years, geophysics was used greatly in oil and gas exploration and many geophysical techniques have been developed for the detection and mapping of unseen deposits and structures.
- Advances have been rapid during the past decade because of the development of new electronic devices for field equipment and the widespread applications of the digital computer in the interpretation of geophysical data.
- Several of the devices now used by geophysicists were developed from methods used for locating guns, submarines and aircraft during the two world wars.

Geophysics is a highly interdisciplinary subject, and geophysicists contribute to every area of the Earth sciences. To provide a clearer idea of what

constitutes geophysics, this section describes phenomena that are studied in physics and how they relate to the Earth and its surroundings. The gravitational pull of the Moon and Sun give rise to two high tides and two low tides every lunar day, or every 24 hours and 50 minutes. Therefore, there is a gap of 12 hours and 25 minutes between every high tide and between every low tide.

Geophysical fluid dynamics is a primary tool in physical oceanography and meteorology. The rotation of the Earth has profound effects on the Earth's fluid dynamics, often due to the Coriolis Effect. In the atmosphere it gives rise to large-scale patterns like Ross by waves and determines the basic circulation patterns of storms. In the ocean they drive large-scale circulation patterns as well as Kelvin waves and Ekman spirals at the ocean surface. In the Earth's core, the circulation of the molten iron is structured by Taylor columns.

Waves and other phenomena in the magnetosphere can be modelled using magneto hydrodynamics. Geophysical measurements are generally at a particular time and place. Accurate measurements of position, along with earth deformation and gravity, are the province of geodesy. While geodesy and geophysics are separate fields, the two are so closely connected that many scientific organizations such as the American Geophysical Union, the Canadian Geophysical Union and the International Union of Geodesy and Geophysics encompass both.

Absolute positions are most frequently determined using the global positioning system (GPS). A three-dimensional position is calculated using messages from four or more visible satellites and referred to the 1980 Geodetic Reference System. An alternative, optical astronomy, combines astronomical coordinates and the local gravity vector to get geodetic coordinates. This method only provides the position in two coordinates and is more difficult to use than GPS. However, it is useful for measuring motions of the Earth such as nutation and Chandler wobble. Relative positions of two or

more points can be determined using very-long-baseline interferometry.

Gravity measurements became part of geodesy because they were needed to related measurements at the surface of the Earth to the reference coordinate system. Gravity measurements on land can be made using gravimeters deployed either on the surface or in helicopter flyovers. Since the 1960s, the Earth's gravity field has been measured by analyzing the motion of satellites. Sea level can also be measured by satellites using radar altimetry, contributing to a more accurate geoid. In 2002, NASA launched the Gravity Recovery and Climate Experiment (GRACE), wherein two twin satellites map variations in Earth's gravity field by making measurements of the distance between the two satellites using GPS and a microwave ranging system. Gravity variations detected by GRACE

include those caused by changes in ocean currents; runoff and ground water depletion; melting ice sheets and glaciers.

Relation between Geology and Geophysics:

GEOLOGY: It involves the study of the earth by direct observations on rocks either from surface exposures or from boreholes and the deduction of its structures, composition and historical evolution by analysis of such observations.

GEOPHYSICS: It involves the study of the inaccessible earth by means of physical measurements, usually on or above the ground surface. It also includes interpretation of the measurements in terms of subsurface structures and phenomena.

Geophysical studies are quantitative and tangible, whereas geological studies are qualitative and descriptive.

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Autonomous Robot

*In today's world the field of automated technology has advanced to a very high extent. Robotics is already playing a very pivotal and cutting edge role in diverse sectors such as manufacturing, avionics, medicine, defense, automobile & entertainment to name a few. In this paper, we are dealing with an autonomous robot which has capabilities like speech recognition, color recognition, face recognition, motion tracking & obstacle avoiding while the whole robot is controlled through Bluetooth protocol. The goal of this project is to design a robot that communicates with a computer. We are using a PIC microcontroller which is the heart of the robot. The communication pins of the microcontroller are used to connect to the Bluetooth module which helps in establishing a link between the robot and the computer. A motor driver is also used to aid in the movement of the robot. An ultrasonic distance sensor is used for obstacle avoidance. When a command is given to any servo, the controller sends out a digital signal to rotate the servo to the desired position. An mp3 trigger is used to achieve sound output of the mp3 files stored on the memory card. The robot can also be controlled through a mobile or a tablet. It has an auto navigation system and moves on every possible rough surface. **Key Words :** Autonomous, Bluetooth protocol, PIC microcontroller, ultra sonic sensor, motor drive, mp3 trigger.*

P.SIVA RAMI REDDY*, VISHAL KUMAR AGARWAL, BIHAMIDI RAMA** & I.V. SUBBA REDDY*****

Introduction:

Science changes its face every day in order to reach the heights of human possibilities. Robotics is one of such realm of the extravagant innovations created by human mind. In this unpredictable and naive world, robotics can be used for security purposes. This paper describes about the use of robotics for security purposes such as diffusing bombs. The robot is completely autonomous with several features such as color recognition, face recognition, voice recognition, obstacle avoiding, QR code, recognition, GPS navigation, etc.

In the paper [1], the robot designed is basically a mobile device which carries out different services and can be used in two different ways. The robot in this paper can either be controlled manually i.e., through a device which gives commands to it, or automatically which means the robot carries out all the services automatically.

In the paper [2], the robot is designed to operated manually or autonomously both at a time and the robot performs the tasks for the well-being and this type of robot is either mobile or manipulative or both.

In the paper [3], all the components of the robot are integrated on a mobile robot platform and the robot is used to interact with the humans in a kitchen scenario.

Proposed Work:

Nowadays, the field of technology especially the automated technology is advancing day by day. People prefer things such as machines, and other objects to be automated such that it decreases the amount of work to be done and perhaps makes it much easier in this automation process. The tasks performed by the automated machines are much faster as compared to that of humans. We have created an autonomous robot which interacts with the outside world and follows the instructions given by us such as lifting a water bottle or moving to a specific distance and talk back ability, the robot also recognizes the face and even differentiates between colors with help of a wireless camera attached to it. This robot is very helpful in today's world as it has the ability to ride on any rough surface enabling it to enter into remote areas where a lot of people cannot enter or can be used to diffuse the bombs while standing at a particular distance without causing any harm to us.

Instruments:

The following components are used in this system:

(1) **Microcontroller :** The heart of the robot is PIC18LF4685 which has a high computational performance at an economical price, high-endurance and Enhanced Flash program memory. PIC18LF4685 is a microcontroller which

*Department of Physics, SCNR Govt. Degree College, Proddatur, Kadapa (Andhra Pradesh)

**Department of Electronics Technology, Loyola Academy Degree & PG College, Old Abul, Secunderabad (Telangana)

***Department of Physics, GITAM University, Hyderabad Campus, Rudraram, Sangareddy (Telangana)

has a logical choice for many high-performances, power sensitive applications.

(II) Bluetooth Module : Bluetooth is a wireless technology in which the data can be transferred over short distances through radio transmissions. This wireless technology is used mainly in mobile's which has a greater security level as compared to any other wireless technology.

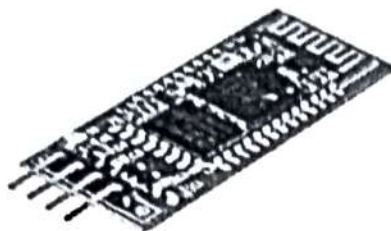


Fig.1 : Bluetooth Module

Fig.1 shows the Bluetooth Module which is used in the robot which operates at a frequency of 2.45 GHz. the transfer rate of this Bluetooth module is 712kbps. The robot is controlled with the help of this Bluetooth module which receives the information from the transmitter and then forwards it to the microcontroller to perform a particular task assigned to it. The Bluetooth module requires a small amount of power supply and is tiny and inexpensive.

(III) Ultrasonic Distance Sensor :

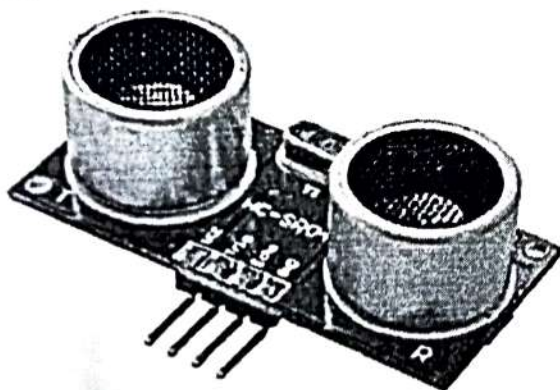


Fig.2 : Ultrasonic Distance Sensor

Fig.2. Shows an ultrasonic distance sensor which works on the principle similar to that of a radar or sonar which calculates the distance and the type of the object which is placed in front of it using the echo in the form of radio or sound waves. This device is also known as a transceiver when it transmits and receives the data and even works as a transducer. These ultrasonic distance sensors generate very high frequencies which calculate the echo which is received after reflecting back from the object.

(IV) Mp3 Trigger :

The mp3 trigger is a PCB board which integrates the mp3 files in an easier way.



Fig.3 : Mp3 Trigger

Fig.3 shows the Mp3 trigger which is used in the robot consisting of 18 external trigger pins which when triggered plays a particular mp3 file assigned to that pin. The Mp2 trigger has a real time volume control which enables the user to control the volume of the mp3 sound at any instance of time. The formats in which the mp3 files are stored in the SD card are in fat32.

(V) Motor Driver :

The current provided to the DC motors by the microcontroller isn't enough to operate it and even the speed and direction of the DC motor isn't easy to be controlled. So, we use a motor driver which can control the speed of the motor using PWM i.e., Pulse Width Modulation and the direction of the DC motors can be controlled by the use of 4 consecutive keys.



Fig.4 : L298N Motor Driver

Fig.4 shows the motor driver which is used in the robot to control the two DC motors in the same direction or in the opposite direction as per the requirement.

(VI) Servos :

A servo motor can be an ac, dc or brushless DC motor which is equipped with a positioning device similar to that of a digital decoder. A basic servo consists of a DC motor with a gear train along with a potentiometer providing position feedback and a small circuit used to control the position. Limit stops are also used in the servo which limits the shaft to turn beyond it.

The Poetical Sketches of Sarojini Naidu

S. Nagendra and B. Sudha Sai

Nightingale of India

Sarojini is an outstanding and distinguished poetess of India. She needs no introduction as her name is familiar to every reader of Indo-Anglian poetry. Popularly known as the 'Bharat-Kokila' or 'The Nightingale of India', she is the most lyrical woman poet. In her perfect lyricism and mellifluous melody, she is indeed the Nightingale of India in Indian imagination. She is one of Mother India's most gifted children, readily sharing her burden of pain, fiercely articulating her agonies and hopes, and gallantly striving to redeem the Mother and redeem the time.

Sarojini Naidu once described herself as "a wild free thing of the air like the birds with a song in her heart." This self-portrait reveals her essential poetic temperament and lyrical gifts. Spontaneity and naturalness of manner give her poetry a distinct bird-like quality and melodic beauty. She is a great music maker of superior poetic craftsmanship. Her poetry has great verbal beauty and glow of imagination. It abounds in sensuous similes and rich metaphors. Here is one from *Lieli*:

*A caste-mark on the azure brows of heaven
The golden moon burns, sacred, solemn bright.*

A Poet-Patriot

Sarojini's poetry reflects her involvement with Indian life. She is an epitome of Indian womanhood and commands respect from the younger generation as an intrepid freedom-fighter. She made outstanding achievement in the fields of poetry and politics. She may therefore be described as a poet-patriot with the accent on the former component. Being born at Hyderabad in a distinguished Bengali family, she is endowed with a long tradition of cultural heritage

Her Life in Hyderabad

Hyderabad was a prominent seat of medieval Muslim culture and Sarojini lived in the Islamic atmosphere of delicacy, oriental splendor and richness of Persian poetry. Hers was a royal and beautiful city whose glory she has recorded in two poems "Nightfall in the city of Hyderabad" and "In the Bazaars of Hyderabad". Islamic culture and Persian poetry greatly influenced her. Her poetry abounds in pictures of Muslim life and images borrowed from Persian poetry. Here is a typical picture of Muslim life.

*Hark from the minaret, how the muezzin's call
Floats like a battle-flag over the city wall.....*

Apart from learning Urdu and being acquainted with Persian poetry, Sarojini learned English and Bengali. She matriculated from Madras University at the age of twelve. It seems that English romantics Keats and Shelley were her favorite though she also read Tennyson, Browning, Rossetti and Swinburne. These poets have influenced her art and sensibility. She imitated them in the beginning of her poetical career.

Romantic Indian Scenes

Some of the poems of Sarojini Naidu are romantic but they depict Indian scenes and sights. The folk songs are not rude they are full of lyricism, simplicity and rhythmic beauty. Of all these the most famous is 'The Indian Weavers', a poem of deep symbolic beauty. Other poems like 'Palanquin Bearers', 'The Snake Charmer' are equally remarkable for their romantic imagery and rhythmic lilt. She tried to catch and reproduce in English the lilt and atmosphere some of the folk songs in her early poems like 'The Bangle Sellers', 'Palanquin Bearers', 'Coromandel Fishers' and 'Snake Charmer'. Here is a poem typical of her romanticism, lyricism and verbal beauty and color.

*Weavers, weaving at break of day,
Why do you weave a garment so gay?...
Blue as the wing of a halcyon wild,
We weave the robes of a new-born child...*

There are love songs, elegies and dirges in Sarojini Naidu's poetry. Spring inspires her to sing but even as she thrills at the thought of 'The Festival of Spring', 'Vasant Panchami'. Her compassionate heart rues the plight of the Hindu widow who has no part in the festive ceremonials:

*Hai! What have I to do with nesting birds,
With lotus -honey, corn and ivory curds,
With plating blossom and pomegranate fruit,
Or rose- wreathed blossom and pomegranate fruit,
With lighted shrines and fragrant all tar fires,
Where happy women breathe their hearts; desires?
For my sad life is doomed to be alas
Ruined and sere like sorrow- trodden grass.
Akin to every lone and withered thing
That hath foregone the kisses of the spring.*

The Broken Wing

The third and the last volume of Sarojini's poems published in her lifetime is entitled 'The Broken Wing'. The memorial verses addressed to her father and to Gokhale are notably articulate 'In Salutation of her Father'

*O splendid dreamer in dreamless age
Whose deep alchemic vision reconciled
Time's changing message with the undefiled*

Calm wisdom of thy vedic heritage!

The title is symbolic and was taken from G.K Gokhale's question 'Why should a song bird like you have a broken?' which serves as an epigraph to her title poem containing two parts Question and Answer. The question is:

Song-bird why dost thou bear a broken wing?

And here comes the answer:

Behold! I rise to meet the destined spring

And scale the stars upon my broken wing!

Sarojini dedicated 'The Broken Wing' to the 'dream of today and the hope of tomorrow' Both the dream and the hope are about the future of India. The volume is permeated with the spirit of India, though some of the pieces convey her personal losses, disappointments and longings. One such poem is 'In Salutation to My Father's Spirit'. In 'The Broken Wing' as in 'The Bird of Time' Sarojini shows equal attraction for the Hindu and the Islamic traditions. The former is represented by poems like 'Lakshmi', the 'Lotus born', 'The Flute Player of Brindavan' and 'Kali the Mother', 'The Prayer of Islam', 'A Song from Shiraj', 'The Imam Bara', 'The Wandering Beggars' and 'Imperial Delhi'.

It is observed that this volume contains sixty-one poems but on actual count there are sixty-two poems. The volume is divided into four groups: 'Songs of Life and Death', 'The Flowering Year', 'The Peacock Lute' and 'The Temple'. The poems contained in these three volumes were later rearranged and put together in one big volume under the title 'The Sceptered Flute.' The rearrangement of poems is not chronological.

Freedom Fighter-Poet

It has already been stated that in 1920 Sarojini opted out of literature and took active participation in politics but she never ceased to be a poet. In 1928 she told Prof. Amarnath Jha of her intention of writing a book called 'Feathers of Dawn'. Mr. Jha said, "We heard no more of this collection and it is to be feared that the poems are lost." But, the poems were rescued and after Sarojini's death, her daughter Padmaja Naidu edited and collected them under the title 'The Feathers of the Dawn' published in 1961. The collection contains thirty-seven poems, five sonnets and thirty-two short lyrics. The collection includes such fine lyrics as 'A Persian Lute Song', 'The Gift', 'The Amulet', 'The Water Hyacinth', 'Raksha Bandhan' and 'The Festival of Sea'. It should now silence those critics who say that she abandoned poetry because her poetic powers had declined. It is opined that her poetic lyrical powers might be waning, but her poetry gained in maturity and seriousness.

Gandhi's Impact

With the arrival of Mahatma Gandhi on the political scene, Sarojini Naidu finds a new power to galvanize her to life. It is an age of heroic striving, an age of imperatives and absolutes. She looks into her bruised and broken heart and sees a new vision - the vision of chained Mother - and vows to break the bonds. She remarks, "My woman's intelligence cannot grapple with the transcendent details of politics." But love of the Mother is no abstruse science, and

therefore for Sorojini Naidu politics is but a form of love and sedition but a form of poetry. The new lover expresses herself in inspiring oratory and fearless action. She presides over the Congress in 1925 and goes to prison cheerfully. She says "What though there be no pilot to our boat? Go, tell them we need him not. God is with us and we need no pilot." Her assurance is all the grater when the nation finds in the Mahatma its destined pilot at last. She keeps faith with her leader till the very hour of his martyrdom. Her own death follows on third March 1949, and Nehru as Prime Minister then pays this fitting tribute to her in the Constituent Assembly:

She began life as a poetess. In later years, when the compulsion of events drew her into the national struggle and she threw herself into it with all the zest and fire, she possessed, she did not write much poetry with pen and paper but her whole life became a poem and a song ...

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S. Nagendra
Lecturer in English
SKSC Degree College
Proddatur, Kadapa Dt.
Andrapradesh
India
sunkunagendra71@gmail.com

B. SudhaSai
Assistant Professor of English
GITAM University
Visakhapatnam Sudhasai70@gmail.com



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SPECTROPHOTOMETRIC DETERMINATION OF AMETRIDIONE AND IN ITS COMMERCIAL FORMULATIONS

G.Chandra Sekhar¹, B.Sathyanarayana² & P.Suguna³

¹Department of Chemistry, Govt. degree & PG College, Puttur(A.P)

^{2,3}Department of Chemistry, SGS Arts College, Tirupati(A.P)

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ABSTRACT

A simple, precise, rapid sensitive and accurate spectrophotometric methods have been developed for the estimation of Ametrudione in pure form and its formulations and Spiked vegetables and water samples. This method is based on oxidative coupling of Ametrudione with MBTH in the presence of Ferric chloride to form green colored product with Maximum of 615nm. The product obeyed beers law in the concentration range 0.5-3 ml (5-30 μgml^{-1}) with molar absorptivity of 1.001×10^4 . Sandel's sensitivity 0.004945. The assay of results was found to be good agreement with label claim.

Keywords: Ametrudione. UV. Validation.

I. INTRODUCTION

A survey of the literature revealed that different analytical techniques for the assay of MTM have been reported. Voltametric detection of the herbicide Ametrudione at a bismuth film electrode in non deaerated solution¹ Electroanalysis of Ametrudione and metribuzen on lignin By Adsorption² Electrochemical reduction of Ametrudione³ Identification of different products obtained by electrochemical and photochemical reduction of the Ametrudione⁴ Voltametric determination of Ametrudione with an electrogenerated molecularly imprinted polymer microsenser⁵ Electrochemical determination of the effect of lead (II) on the photochemical degradation of the pesticide Ametrudione⁶ Voltametric determination of Herbicide Ametrudione using Mercury and silver solid amalgam electrode⁷ Preconcentration and voltametric determination of the herbicide Ametrudione with a silica modified carbon paste electrode⁸ Determination and method validation of Ametrudione in soil by RP-HPLC⁹ Electrochemical determination of the effect of Copper (II) on the photochemical degradation of the pesticide Ametrudione¹⁰.

There is however no reported UV-Visible spectrophotometric method for the analysis of Mitamitron in its technical grade and formulations. This describes a validated UV- visible spectrophotometric method for the quantitative determination of Mitamitron. Functional group used for color development of Mitamitron was primary amine group. The results obtained in this method were based on complex formation reaction of Mitamitron with Oxidative coupling reaction with MBTH / Ferric chloride.

The author has developed UV- Visible spectrophotometric method based on the use of method, without use of any interferences. An attempt has been made to develop and validate all methods to ensure their accuracy, precision, repeatability, reproducibility and other analytical method validation parameters as mentioned in the various guidelines.

This describes a validated UV-Visible method for the quantitative determination of Ametrudione. The empirical formula for Ametrudione is $\text{C}_{10}\text{H}_{10}\text{N}_4\text{O}$ and the molecular weight is 202.2 grams. It has the following structure.

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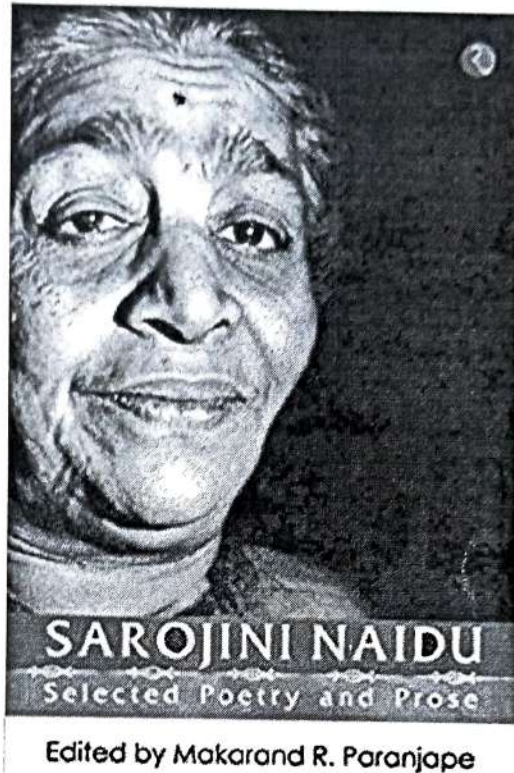
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Sarojini Naidu as a Poet of Nature ✓

S. Nagendra and Dr. P. Sreenivasulu Reddy



Courtesy: <https://www.amazon.com/Sarojini-Naidu-Selected-Poetry-Prose/dp/8129115808> ✓

Poetry of Nature

Sarojini Naidu's poetry is undoubtedly poetry of nature. Her love of nature is reflected even in poems which are not about nature but have a different theme. Nature is the eternal environment of man, and Sarojini looks at it with a child-like, open-eyed wonder. Her response to Nature is the response of man in his infancy, who looked at nature, was fascinated with her sights and sounds, with her colors and odors, and is also struck with awe by her grandeur and her mystery. It is homely and familiar that fascinates Sarojini. and Nature. She is neither pantheistic like Wordsworth nor cosmic like Tagore.

Not Simply Related to Visual Sensation

Sarojini Naidu feels a heavenly delight in nature and succeeds in communicating her own delight to her readers. It is said that her response is not limited to the visual sensation. It is auditory and tactual. The vocabulary of her nature poetry is such in words denoting colors, sounds, fragrances and skin feelings such as glassiness, softness, pliability and suppleness. Sarojini feels the spring season meant passion, excitement and the breath of life itself. Most of the poems reveal her sensuous enjoyment of the colors, sounds, fragrance and sights of nature.

Spring

Her poem 'Spring' depicts beautiful pictures of the season. Young leaves grow on the banyan stems. The leaves on the *peepal* tree are red. The honey birds pipe to the budding figs, and honey blooms call the bee. The poppies squander their fragile gold in the silvery aloe-fern, coral and ivory lilies unfold their delicate leaves on the lake. The kingfishers ruffle the feathery sedge. The air is thrilled with butterfly wings in the wild rose hedge. The earth is filled with the luminous blue of the hills. Spring kindles life in the trees, flowers and birds and butterflies. It draws human beings into the eddies of its vital flood. Spring is the moment, the season, and the cycle of Love'

*Kamala tinkles a lingering foot
And Krishna plays on his bamboo flute*

Spring Colours and the Myth of Radha and Krishna

In this lyric the colors of spring are stressed, and the season is related to the myth of Radha and Krishna. In 'A Song of Spring' it is the life and movement with which spring endows all nature that are stressed.

*Wild bees that rifle the mango blossom
Set free awhile from the love god's string.....
... Fireflies weaving aerial dances
In fragile rhythms of flickering gold.*

Nightingale of India and Bharata Kokila – Sensuous Experience of Nature

Because of this lyrical quality of her poetry, she might have earned the titles of the 'Nightingale of India' and 'Bharata Kokila'. In certain lyrics the mood is one of sensuous enjoyment of the manifold beauties of nature.

Social Consciousness and Yearning for Reformation

But the mood changes in *Vasant Panchami* (Festival of Spring) and the lyric records the grief of a widow at the return of spring. It is a day when young girls and married women celebrate the coming of spring. They welcome spring with new-grown corn and lighted lamps, with music and folk-dance. But Lilavati is sad at the very feast of spring. She implores the dragonfly to fold up its wings and not to bring the tidings of spring. She asks the lilting *koels* to hush their voices and the *dadhikulas* to still their throats, because their songs pierce her heart with poisoned arrows. They bring back memories and sweet reminiscences of happy days during her spring time. She asks the flowers to quench their color and hold their fragrance because they slay her heart with bitter memories. She persuades the joyous girls, who go to sing carols to the spring to dim their radiant voices.

Adoration for Flowers – Lotus Born Saraswati and Buddhist Lotus

Sarojini has a great adoration for flowers. Flowers are everywhere in Sarojini's poetry. There is a hierarchy of flowers, the 'lotus' being the first and foremost. This unique flower has been celebrated in Indian poetry, myth and legend since times immemorial, and has acquired far reaching symbolic significance. It is a symbolic representation of purity and sanctity. It is associated with 'Lakshmi', the Lotus-born and 'Saraswathi', who is seated on a lotus. The lotus is equally important in the Buddhist tradition. The Buddha is shown meditating upon a lotus-throne. Lotuses are painted or carved on his palms and toes in Buddhist painting and sculpture. Sarojini is deeply fascinated by these associations

of the lotus in Indian mythology and art. This fascination is reflected in many of her poems. Her own name denotes 'lotus plant' or 'a lake abounding in lotuses'. Her eldest daughter was named 'Padmaja' (Lotus-born), which is also one of the names of 'Lakshmi, the Goddess of Fortune'.

Poetry Abounds in Animals – Focus on Serpents

Indian animals like stallions, golden panthers, cows, monkeys, dears and 'leisurely' elephants enter into her poetry, but it is the serpent intimately connected with innumerable Indian myths and legends which inspires two of her best poems. To Sarojini, snakes are not objects of horror, but of love and adoration, as they are in so many Indian myths and legends. The concluding lines of 'The Snake-Charmer' expresses the Indian snake charmer's deep love for his pet:

*Come, thou subtle bride of my mellifluous wooing
Come, thou silver-breasted moonbeam of desire.*

Sun and Sunshine

Sarojini's response to nature is one of adorations like that of our ancestors. A number of hymns to the objects and forces of nature are scattered all up and down her poetry. She has particular affection for the sun and sunshine, and in the 'Harvest Hymn', the farmers express her own love and gratitude for this 'lord of the morn' and 'lord of the harvest'.

*O giver of mellowing radiance, we hail thee,
We praise thee, O Surya, with cymbal and flute.*

There is, indeed, something characteristically tropical about her love for the sun. But, though she was particularly fond of the bright, clear sunshine which illumines the landscape of India, she also had a deep feeling for the subdued light of the setting sun, as is expressed in 'June Sunset'. In the 'Harvest Hymn', the farmers express the poet's own adoration and gratitude for the beautiful earth, 'the Queen of the gourd flower, queen of the harvest'.

Rainy Season Is Not Forgotten!

Though rainy season does not figure much in her poetry, we get the 'Hymn to Indra', in which the people pray to the Lord of Rain:

*Thou, who with bountiful torrent and river
Dost nourish the heart of the forest and plain,
Withhold not Thy gifts, O Omnipotent Giver,
Hearken, O Lord of Rain.*

In 'Nightfall in the City of Hyderabad', 'the speckled sky' burns like 'a pigeon's throat', 'Jeweled with embers of opal and peridote.' The river flows out, 'Curved like a tusk from the mouth of the City gates', the call of the muezzin's, 'Floats like a battle flag over the city wall', and

*Over the city bridge Night comes majestically
Borne like a queen to a sumptuous festival.*

Remarkably Refreshing

Originality, freshness, and imaginative justness of these images are remarkable. They startle, surprise, and immediately capture the attention of the readers, and bear witness to the minuteness of observation of the poetess. P.V. Rajyalakshmi says, "The City of Hyderabad is dominated by the Musi

river, exactly curved like a tusk from the mouth of the city-gates. The image is at once precise and evocative. Besides, it connects the city to nature-landscape suggesting how the wild river has been tamed into the city's culture, while giving life to it. The sky, at nightfall in the city, looks like a pigeon flown from one of the towers on the river-side, burning like a pigeon's throat; perhaps like the thought of a city bride whose throat quivers and burns with ornaments of opal and peridot.'

To Conclude

Thus, Sarojini's nature-poems are remarkable not only for the loveliness of the Indian nature but also for the beauty of imagery and descriptive details. It is true that they are not poems of fiery lyricism, but imagination, sensuousness and romanticism are all evident. Of all our early Indian poets of twentieth century, Sarojini has outstandingly recaptured the early Indian responses to our natural environments.

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S. Nagendra
Lecturer in English
SKSC Degree College
Proddatur, Kadapa Dt.
Andhra Pradesh
India
sunkunagendra71@gmail.com

Dr. P. Sreenivasulu Reddy
Assistant Professor of English
GITAM University
Visakhapatnam
Andhra Pradesh
India
sreenupydala@gmail.com



Spectroscopic Investigations of Undoped and Rare Earth Doped NLO Single Crystals of Manganese Mercury Thiocyanate Bis-Dimethyl Sulfoxide

L. Bhushan Kumar^{1,*}, E.V. Suresh Kumar², B. Yellamanda³, Y. Nirmal Rajeev⁴

¹Dept. of Physics, SVKP College, Markapur – 523 316, AP, India.

²Dept. of Chemistry, SVKP College, Markapur – 523 316, AP, India.

³Dept. of Botany, SVKP College, Markapur – 523 316, AP, India.

⁴Dept. of Physics, V. R. Siddhartha Engineering College, Kanuru – 520 007, AP, India.

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ABSTRACT

Good optical grade single crystals of pure, lanthanum (La³⁺) and neodymium (Nd³⁺) doped manganese mercury thiocyanate bis-dimethyl sulfoxide (MMTD) crystals are grown from aqueous solution by slow solvent evaporation technique at room temperature. Single crystal X-ray diffraction (XRD) data reveals that the grown crystals belong to the orthorhombic crystallographic system with the non-centrosymmetric space group P2₁2₁2₁. The crystals are characterized using optical absorption, Fourier transform infrared (FT-IR), Fourier transform Raman (FT-Raman), energy dispersive X-ray analysis (EDAX) studies. The second harmonic generation (SHG) efficiencies of the grown crystals are also measured using Kurtz and Perry powder technique. The nonlinear optical (NLO) activity of the pure MMTD significantly enhances due to rare earth dopants.

1. Introduction

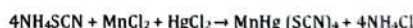
The rapid growth in several important areas like microelectronics and communication technologies is due to the highly demanded progress in the field of crystal growth [1]. In spite of considerable research in this field, it is often considered as a fine combination of science, technology and art to grow new materials in single crystal forms at the optimum growth conditions [2]. An important aspect of utilizing organo-metallic structures for nonlinear optical applications is their unique charge transfer transitions, either from metal to ligand or from ligand to metal. Thiocyanate (SCN) is a highly versatile ligand with two terminal modes and thirteen multidentate bridging modes of coordination. Based on the concept developed by Pearson [3] on the hard and soft acids and bases rationalizes that soft cations show a pronounced affinity for coordination with softer ligands, while hard cations prefer coordination with harder ligands. The SCN-ligands in MnHg(SCN)₄ bridge the tetrahedrally coordinated N-bonded Mn atoms and the tetrahedrally coordinated S-bonded Hg atoms into a 3-D network with the non-centrosymmetric space group. MnHg(SCN)₄ has been identified to exhibit high hyperpolarizability due to the extended π -conjugation of the Mn-NCS-Hg bridges and their parallel alignments in the 3-D crystal structure [4].

Recent studies indicate that the Lewis-base adducts of these crystals have been identified to possess superior NLO property compared to their parent metal SCN crystals. The metal SCNs and their Lewis-base adducts are some of the interesting themes of structural chemistry [5]. This encouraging switch-over is mainly attributed to the enhancement in the NLO activity, by the addition of Dimethyl sulfoxide (DMSO) ligand. The introduction of DMSO aids in better electronic oscillations in SCN ligand, leading to an improvement in NLO efficiency. The present study deals with the growth and characterization of pure and rare earth doped manganese mercury thiocyanate bis-dimethyl sulfoxide (MMTD), Lewis-base adducts of MMTC [4]. In the structure of MMTD, the hard Mn²⁺ ion is coordinated with the harder N-(SCN) and O-(DMSO) ligands, while the soft Hg²⁺ is coordinated with the softer S-(SCN) ligands. The Hg²⁺ ion is coordinated with four SCN S-atoms and is in a tetrahedral geometry [6].

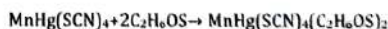
The present investigation deals with the growth and characterization of pure, La³⁺ and Nd³⁺ doped Manganese mercury thiocyanate bis-dimethyl sulfoxide (MMTD) crystals, grown from a mixed solvent of water and DMSO.

2. Experimental Methods

Pure MMTC was synthesized by taking appropriate amount of NH₄SCN, MnCl₂ and HgCl₂. The chemicals were dissolved in double distilled water and stirred well for about 12 hours. The following is the reaction formula.



The seed crystals were obtained using dimethyl sulfoxide as a ligand to react with MMTC in a mixture of dimethyl sulfoxide and de-ionized water. The chemical reaction is:



After vigorous stirring, the pH of the solution was adjusted to be between 2 and 3 by slowly adding dilute HCl, and then allowed to evaporate at room temperature.

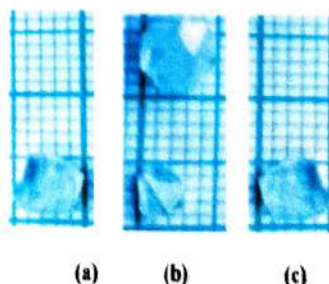


Fig. 1 Photographs of (a) pure, (b) La³⁺ and (c) Nd³⁺ doped MMTD single crystals

The same procedure is repeated for the growth of La³⁺ and Nd³⁺ doped MMTD crystals by substituting 2% of Hg by 2% of La³⁺ and Nd³⁺ respectively. Optically clear defect free and well-shaped crystals were

*Corresponding Author: bhushankumarlanka@gmail.com (L. Bhushan Kumar)

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HUMAN RIGHTS VIOLATIONS: A STUDY.

*Dr.C. Ramana Reddy. M.A., B.Ed., Ph.D.,

ABSTRACT:

"Human rights" means the rights inherent to all human beings regardless of race, sex, nationality, ethnicity, language, religion or any other status. These also include the right to life and liberty, freedom from slavery and torture, freedom of opinion and expression, the right to work and education and many more. The practice of human rights is still more a dream than reality. Violations exist in every part of the world. Article 3 of the Universal Declaration of Human Rights (UDHR) deals about "Everyone has right to life, liberty and security." Briefly it is known as "The Right to live free". But this right violated several times in many parts of the world. According to the World Human Rights Organization some of the countries in the world have bad record regarding the human rights violations. Political, social, economic, religion, race and ethnic factors are responsible for the human rights violations in those countries. The responsibility of human rights protection should be beard by sovereign nations, world peace organizations like UNO and human rights organizations such as Amnesty International, Human Rights Watch etc. Every country should have the accountability to protect the human rights within its territory. Now the researcher attempts how the violations are occurred in various parts of the world and try to give solutions to the violations.

NEED OF THE STUDY:

Rights are the ground work of a state. The nature of the state is known by the rights it maintains. For the socio, economic and political development of the people in the country as well as in the world, rights are necessary for physical and mental development. Human rights play a important role in a society. Without human rights, there is no peacefulness prevailed in the world. Better implementation of human rights leads to enhance the democratic rule and minimize the problems of the people and ultimately peace will be prevailed in universe. In view of the importance of human rights the national and the international organizations including UNO are stressing for the protection of human rights and try to reduce the violations all over the world. Hence, the paper attempts how the human rights violations are take place all over the world and to trace out the solutions to the human rights violations.

*Asst. professor & HOD, Dept of Political Science, Govt. & P.G. College, Nagari, Chittoor (Dist). -517590.

OBJECTIVES OF THE PAPER:

1. To study the importance of human rights.
2. To define the violations of human rights.
3. To explore about the violations of human rights across the world.
4. To give solutions to the human rights violations

INTRODUCTION

"Human rights" means the rights inherent to all human beings regardless of race, sex, nationality, ethnicity, language, religion or any other status. These also include the right to life and liberty, freedom

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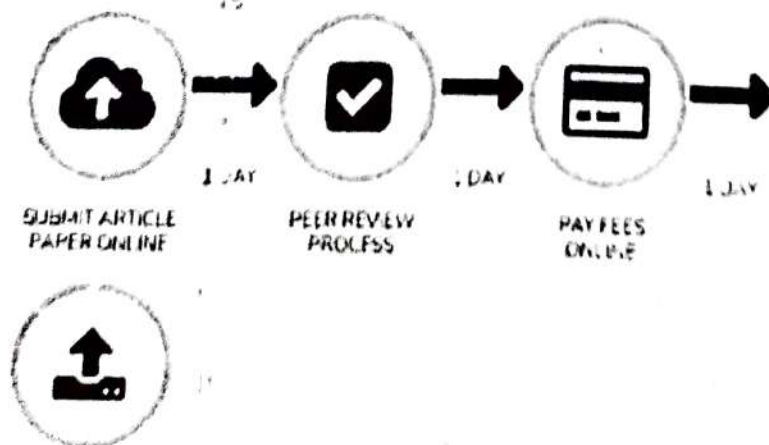
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Antibacterial and antifungal activities of Boswellia ovalifoliolata stem bark

G.CHANDRA SEKHAR, T. Gunasekhar, S.Mahalakshmi

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ANTIBACTERIAL AND ANTIFUNGAL ACTIVITIES OF BOSWELLIA OVALIFOLIOLATA STEM BARK

G.Chandasekhar¹, T. Gunasekhar², S.Mahalakshmi³, and M.Siddaiah¹

¹ Government degree & PG College, Puttur, 517 583, AP, INDIA.

² P.G & Research Department of Chemistry Pachaiyappa's College, University of Madras, Chennai-600 030, Tamil Nadu, INDIA.

³ P. Rami Reddy Memorial College of Pharmacy, Kadapa, AP, INDIA.

Abstract : This study was carried out with an objective to investigate the antibacterial and antifungal potentials of Stem bark of *Boswellia ovalifoliolata*. The aim of the study is to assess the antimicrobial activity and to determine the zone of inhibition of extracts on some bacterial and fungal strains. In the present study, the microbial activity of ethanolic extracts of stem bark of *Boswellia ovalifoliolata* was evaluated for potential antimicrobial activity against medically important bacterial and fungal strains. The antimicrobial activity was determined in the extracts using agar disc diffusion method. The antibacterial and antifungal activities of extracts (50, 100, 150 and 250 µg/ml) of *Boswellia ovalifoliolata* were tested against two Gram-positive—*Staphylococcus aureus*, *Bacillus subtilis* two Gram-negative—*Periplomonas aeruginosa*, *E. coli*, bacteria. Two fungal strains—*Aspergillus Niger* and *Aspergillus nysae*. Zone of inhibition of extracts were compared for antibacterial activity and nystatin and griseofulvin for antifungal activity. The results showed that the remarkable inhibition of the bacterial growth was shown against the tested organisms. The phytochemical analyses of the plants were carried out. The microbial activity of the *Boswellia ovalifoliolata* was due to the presence of various secondary metabolites. Hence, these plants can be used to discover bioactive natural products that may serve as leads in the development of new pharmaceuticals research activities.

Index Terms - *Boswellia ovalifoliolata*, *in vitro* antibacterial activity, antifungal activity, secondary metabolites.

1. INTRODUCTION

Antibiotics are important weapons in fighting bacterial infections and have vastly improved the quality of human life since their introduction. However, over the past few decades, these health benefits are under threat as many commonly used antibiotics have become less and less effective against certain illnesses, not only because many of them produce toxic element. Hence it is essential to investigate new drugs. Drugs derived from natural sources play a significant role in the prevention and treatment of human diseases. In many developing countries, traditional medicine is one of the primary healthcare systems.^[1-2] Herbs are widely used in the traditional medicine and their curative potentials are well documented.^[3] About 61% of new drugs developed between 1981 and 2002 were based on natural products and they have been very successful especially in the areas of infectious disease and controlling cancer.^[4] Recent trends, however, show that the discovery rate of active novel chemical entities is declining.^[5] Natural products of higher plants may give a new source of antimicrobial agents with possibly novel mechanisms of action.^[6,7] The effects of plant extracts on bacteria have been studied by a very large number of researchers in different parts of the world.^[8] Much work has been done on ethnomedicinal plants in India.^[9] Plants are rich in a wide variety of secondary metabolites such as tannins, terpenoids, alkaloids, flavonoids, glycosides, etc., which have been found *in vitro* to have antimicrobial properties.^[10,11] Herbal medicines have been known to man for centuries. Therapeutic efficacy of many indigenous plants for several disorders has been described by practitioners of traditional medicine.^[12] Antimicrobial properties of medicinal plants are being increasingly reported from different parts of the world. The World Health Organization estimates that plant extracts or their active constituents are used as folklore endemic medicine in traditional therapies of 80% of the world's population.^[13] The harmful microorganisms can be controlled with drugs and these results in the emergence of multiple drug-resistant bacteria and it has created alarming clinical situations in the treatment of infections. The pharmaceutical industries have produced a number of new antibiotics resistance to these drugs by microorganisms has increased. In general, bacteria have the genetic ability to transmit and acquire resistance to synthetic drugs which are utilized as therapeutic agents.^[14] In an effort to expand the antibacterial agents from natural resources. In the present study *Boswellia ovalifoliolata* belonging to Burseraceae family has been selected. In the Indian literature,^[15,16] reported to be useful against inflammations, joint pains, ulcers, arthritis, amoebic dysentery and diabetes has been suggested^[17] and it is widely used by tribal people to treat various ailments including ringworm and other fungal skin infections.^[18] *Boswellia ovalifoliolata* extract are known to be an important source of secondary metabolites, Indian people are using the leaves to treat inflammation *Boswellia ovalifoliolata* plant organs are notably phenolic compounds.^[19] *Boswellia ovalifoliolata* exhibited significant antimicrobial activity and showed properties that was mentioned in folkloric as broad-spectrum antimicrobial agents.^[20] Thus, *Boswellia ovalifoliolata* is well anchored in its traditional uses has now found wide-spread acceptance across the world. In the current investigation carried out, a screening of ethanolic extracts of

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Govt. Degree & PG College, Puttur, Chittoor(Dt), AP.

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D. Paulin Diana Dani, Manonmaniam Sundaranar University, Tirunelveli-627012, Tamilnadu, India.

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Affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu, India.

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Spectrophotometric Determination of Metolazone and in Its Commercial Formulations

P Eswar kumar¹, G Chandra sekhar^{2*}, C Nageswara Reddy²

¹Dept. of Physics, Govt. degree & PG College, Puttur, Chittoor(Dt), AP

²Dept. of Chemistry, Govt. degree & PG College, Puttur, Chittoor(Dt), AP

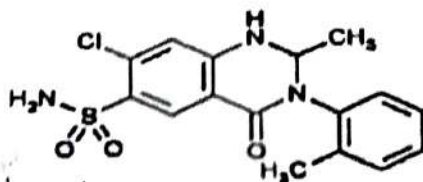
*csgandii3@gmail.com

Abstract: A simple, precise, rapid, sensitive and accurate spectrophotometric method have been developed for the estimation of Metolazone in pure form and its formulations and Spiked vegetables and water samples. This method is based on oxidative coupling of Metolazone with MBTH in the presence of Ferric chloride to form green coloured product with Maximum of 615 nm. The product obeyed Beer's law in the concentration range of 0.5 to 3 ml (5-30 µgml⁻¹) with molar absorptivity of 1.001×10^4 . Sandal's sensitivity 0.004945. The assay of results was found to be good agreement with label claim.

Keywords: Metolazone, UV Validation.

1. INTRODUCTION

Metolazone is chemically 7-chloro-2-methyl-3-(2-methylphenyl)-4-oxo-1, 2-dihydroquinazoline-6-sulfonamide [3] (Structure-1). Metolazone is an oral diuretic drug, commonly classified with the thiazide diuretics. It is primarily used to treat congestive heart failure and high blood pressure. Metolazone indirectly decreases the amount of water reabsorbed into the bloodstream by the Kidney, so that blood volume decreases and urine volume increases. This lowers blood pressure and prevents excess fluid accumulation in heart failure. The empirical formula for Metolazone is C₁₆H₁₆ClN₂O₃S and the molecular weight is 365.84 grams.



Metolazone (Structure-1)

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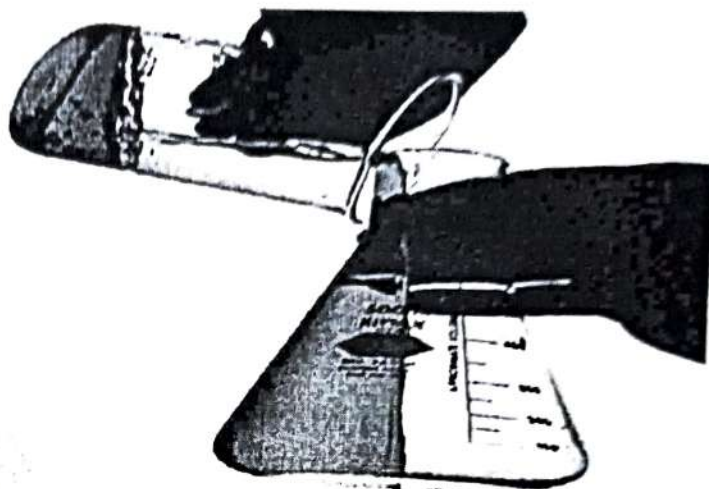
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VALIDATED SPECTROPHOTOMETRIC METHOD FOR THE DETERMINATION OF DOXAZOCIN IN PURE AND IN ITS DOSAGE FORM

G. Chandra Sekhar^{*1}, V. Prabhakar Rao¹, P. Eswar Kumar²

¹*Department of Chemistry, Government Degree and Post Graduate College, (Recognised as Research Centre by UGC and S. V. University, Tirupati), Puttur, Chittoor, 517 583, Andhra Pradesh, India.

²Department of Physics, Government Degree and Post Graduate College, (Recognised as Research Centre by UGC and S. V. University, Tirupati), Puttur, Chittoor, 517 583, Andhra Pradesh, India.

ABSTRACT

A simple, precise, rapid, sensitive and accurate Spectrophotometric methods have been developed for the estimation of Doxazocin UV in pure form and its pharmaceutical formulations based on oxidative complexation reaction UV with 1.10- phenanthroline reagent at P^H - 4 which is extractable at 510nm. Beer's law is obeyed in the concentration range 1-6ml (10 to 60 $\mu\text{g ml}^{-1}$). The developed method was applied directly and easily for the analysis of the pharmaceutical formulations. RSD was found to be 0.5318 and recovery 99.77 % respectively. The method was completely validated and proven to be rugged. The interferences of the ingredients and excipients were not observed. The repeatability and the performance of the proved method were established by point and internal hypothesis and through recovery studies.

KEYWORDS

Spectrophotometry, Doxazocin, 1, 10-phenanthroline and Oxidative complexation.

Author for Correspondence:

Chandra Sekhar G,
Department of Chemistry,
Government Degree and Post Graduate College,
Puttur, Chittoor, 517 583, Andhra Pradesh, India.

Email: csgandii3@gmail.com

Available online: www.uptodateresearchpublication.com

INTRODUCTION

Doxazosin [(4-amino-6, 7-dimethoxy-2-quinazolinyl)-4-(1, 4-benzodioxan-2-yl-carbonyl) piperazine] is a postsynaptic α 1-adrenoreceptor antagonist used either alone or in combination with diuretics or α 1-adrenergic-receptorant agonist for the treatment of hypertension and benign prostatic hyperplasia. It is structurally related to prazosin Figure No.1. The literature survey of Doxazosin as follows. Babmoto *et al*¹, Eliot *et al*², and Carlson *et al* and Bailey *et al*³, has to Report the analysis of pharmacokinetics and effect on blood pressure of Doxazosin in normal subjects and patients.

January - March ✓

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NUMERICAL STUDY OF MHD BOUNDARY LAYER FLOW OF A VISCOELASTIC AND DISSIPATIVE FLUID PAST A POROUS PLATE IN THE PRESENCE OF THERMAL RADIATION

G. Sivaiah,¹ K. Jayarami Reddy,² P. Chandra Reddy,³ & M.C. Raju^{3,*}

¹Department of Mathematics, Rayalaseema University, Kurnool-518002, A.P., India

²Department of Mathematics, K.L. University, Vaddeswaram, Guntur-522502, A.P., India

³Department of Mathematics, Annamacharya Institute of Technology and Sciences, Rajampet, Kadapa-516126, A.P., India

*Address all correspondence to: M.C. Raju, Annamacharya Institute of Technology and Sciences, Rajampet, Kadapa-516126, A.P., India; Tel.: +91 984 899 8649; +91 855 503 6944, E-mail: mcrmath@yahoo.co.in

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In this manuscript, an investigation is done to analyze various properties of fully developed free convective flow of a viscous incompressible electrically conducting viscoelastic and dissipative fluid past a vertical porous plate bounded by a porous medium in the presence of thermal radiation and variable permeability. A magnetic field of uniform strength is applied perpendicular to the plate, and the presence of a heat source is also considered. The coupled dimensionless nonlinear partial differential equations are solved numerically by finite difference method. The numerical computations have been studied through graphs. The presence of thermal radiation decreases the temperature, and an opposite nature is shown in the case of Eckert number.

KEY WORDS: MHD, thermal radiation, variable suction, variable permeability, vertical porous plate, heat and mass transfer

1. INTRODUCTION

The study of magnetohydrodynamic (MHD) viscoelastic fluids with radiation effect past a porous medium plays a significant role in many scientific, industrial, and engineering applications. This flow was essentially utilized in the fields of petroleum engineering concerned with oil, gas, and water through a reservoir in the analysis of the migration of underground water. To recover the water for drinking and irrigation purposes, the principles of this flow are followed. Many researchers identified the importance of this flow and contributed in studying the application of viscoelastic fluid flow of several types past a porous medium in the presence of thermal radiation. Mahdy et al. (2015) studied thermosolutal Marangoni boundary layer MHD flow with the Soret and Dufour effects past a vertical flat plate. Kairi and Murthy (2009) discussed the effect of melting and thermodiffusion on natural convection heat mass transfer in a non-Newtonian fluid-saturated non-Darcy porous medium. Mukhopadhyay and Mandal (2015) analyzed MHD mixed convection slip flow and heat transfer over a vertical porous plate. Mukhopadhyay et al. (2012) investigated forced convective flow and heat transfer over a porous plate in a Darcy-Forchheimer porous medium in the presence of radiation. Ahmed and Kalita (2012) discussed MHD transient flow through a porous medium bounded by a hot vertical plate in the presence of radiation. Kumar and Varma (2011) considered thermal radiation and mass transfer effects on MHD flow past a vertical oscillating plate with variable temperature effects and variable mass diffusion. Ravi Kumar et al. (2014) examined the combined effects of heat absorption and MHD flow on convective Rivlin-Ericksen flow past a semi-infinite vertical porous plate with variable temperature and suction. Sharma and Ajab

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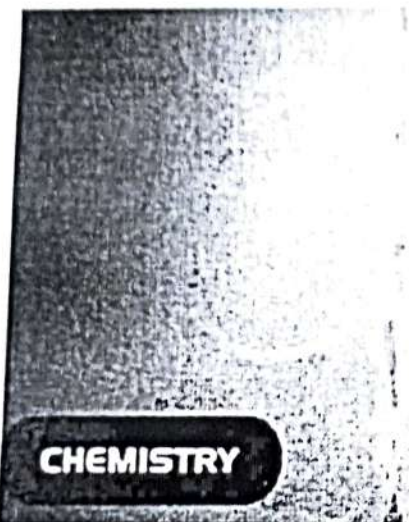
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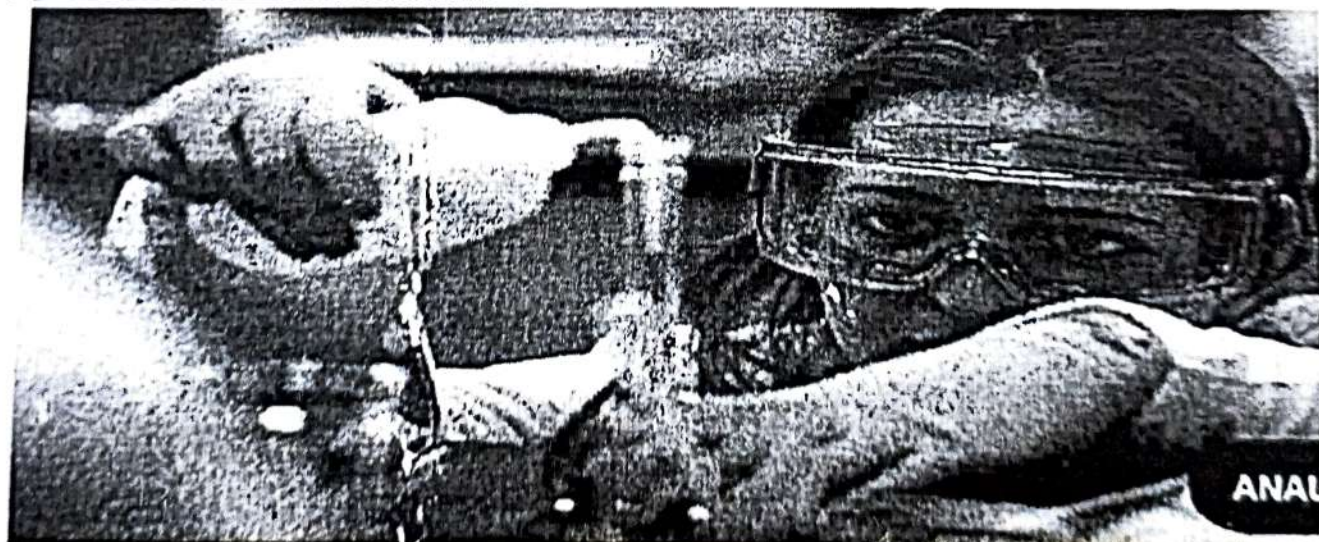
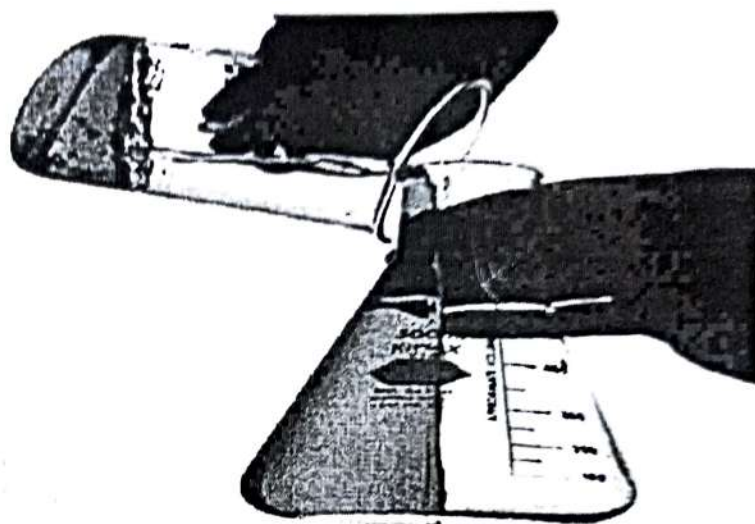
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PHASE EQUILIBRIA FOR BINARY MIXTURES OF NONANE
WITH OCTANE AND OCTANE WITH ORTHOXYLENE.

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PHASE EQUILIBRIA FOR BINARY MIXTURES OF NONANE WITH OCTANE AND OCTANE WITH ORTHOXYLENE, METAXYLENE AT 101.3 kPa

G. Chandra Sekhar*¹ and Ming-Jer Lee²

¹Department of Chemistry, Government Degree and PG College, Puttur, Chittoor, 517 583, (Affiliated to S V University, Tirupati), Andhra Pradesh, India.

²Department of Chemical Engineering, National Taiwan University of Science and Technology, 43 Keelung Road, Section 4, Taipei 106-07, Taiwan.

ABSTRACT

Isobaric vapour-liquid equilibrium boiling temperature measurements have been determined at 101.3 kPa as function of composition for the binary mixtures of nonane with octane and octane with orthoxylene and metaxylene by using a recirculation type apparatus. The experimental temperature, vapour and liquid composition (T-x-y) results were correlated with the NRTL and UNIQUAC models. All systems studied here behave like non-ideal solutions.

KEYWORDS

Nonane, Octane, Orthoxylene, Metaxylene, Isobaric, Vapour liquid equilibrium and Binary.

Author for Correspondence:

Chandra Sekhar G,
Department of Chemistry,
Government Degree College,
Puttur, Chittoor, 517 583, Andhra Pradesh, India.

Email: csgandii3@gmail.com

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INTRODUCTION

Experimental data of excess thermodynamic properties of liquids and liquid mixtures are of great fundamental and practical importance. These properties allow one to draw information on the structure and interactions of mixed solvents. The knowledge of phase equilibrium properties of liquid mixtures are fascinating and of great fundamental, practical importance, and industrial points of view. An accurate and complete knowledge of VLE data on the mixtures under consideration is necessary for the design of distillation equipment. In general, alkanes show a relatively low reactivity, because their C bonds are relatively stable and cannot be easily broken. Unlike most other organic

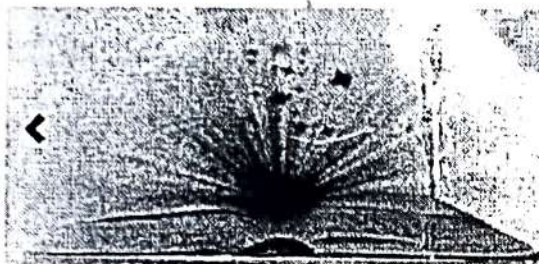
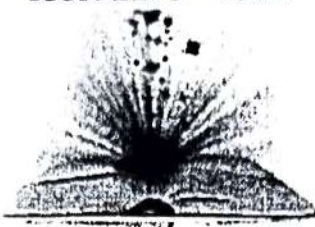


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Synthesis and Antimicrobial Activity of Novel Urea/Thiourea Derivatives

T. Narasalah, G. Chandra Sekhar* and V. Prabhakara Rao

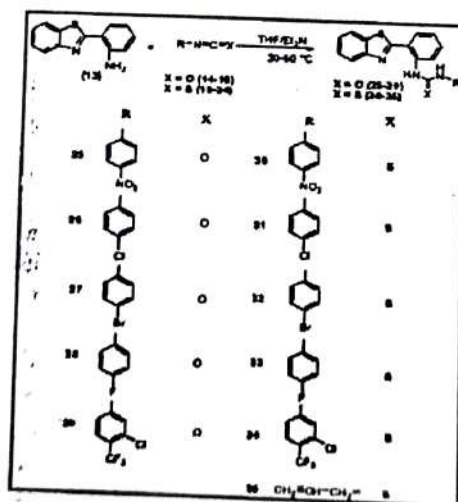
Department of Chemistry, Govt. Degree and PG College, (Affiliated to Sri Venkateswara University, Tirupati), Puttur, 517 583, A. P., INDIA
Email: csgandii3@gmail.com

Accepted on 3rd February, 2019 ✓

ABSTRACT

Synthesis of novel urea and thiourea derivatives has been accomplished by reacting 2-(benzo[d]thiazol-2-yl) aniline with various isocyanates and thio isocyanates. Structures of all the newly synthesized compounds were characterized by IR, ¹HNMR, ¹³CNMR, mass and elemental analysis. Their structures were established by analytical and spectral data. All the newly synthesized compounds were screened for their antibacterial activity against gram positive bacteria such as *Staphylococcus aureus* (ATCC-29737) and *Bacillus subtilis* (ATCC-6633) and the gram-negative bacteria such as *Escherichia coli* (ATCC-2343) and *Pseudomonas aeruginosa* (MTCC-1034) using cup plate agar diffusion method. Synthesized compounds exhibited high antibacterial activity against both gram positive and gram-negative strains. Compounds 28, 33 exhibited good antifungal activity, remaining title compounds exhibited moderate antibacterial and antifungal activities. All the newly synthesized compounds exhibited promising antimicrobial activity.

Graphical Abstract



Synthesis of urea and thiourea derivatives

Keywords: Urea, Thiourea, Antibacterial activity, Antifungal activity.

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UN CONTRIBUTION TO THE PROTECTION AND EXECUTION OF HUMAN RIGHTS : A STUDY.

Dr.C.Ramana Reddy, HOD, Dept of Political Science, Govt. Degree & P.G. College, NAGARI, Chittoor (Dt.), A.P. - 517590.

1. ABSTRACT

Human rights are constantly evolving throughout the human history. These were reflected in the ancient period through the Vedas, Babylonian Code of Hammurabi, the Bible, the Quran and the Analects of Confucius. In the modern period human rights were defined by Scottish philosopher John Locke, who advocated the theory of Natural Rights. After the end of the first world war, the League of Nations formed aimed at to achieve the protection of human rights was one of its goals. In the aftermath of the atrocities of second world war, there was increased concern for the social and legal protection of human rights as fundamental freedoms. Hence, the paper attempts how the UNO defined the concept of human rights and to conclude the various human rights treaties regarding the execution and protection of human rights. The paper also covered the various mechanisms which are working under the UNO in this regard.

Objectives of the paper.

- 1.To trace out the historical evolution of human rights.
2. To explore the importance of Universal Declaration of Human Rights (UDHR).
3. To analyse the various mechanisms of UNO for the protection and execution of human rights.

NEED OF THE STUDY

Rights are the ground work of a state. The nature of the state is known by the rights it maintains. For the socio, economic and political development of people in the country as well as in the world rights are necessary for physical and mental development. Human rights played a vital role in the society. Without human rights there is no peaceful atmosphere prevailed in the society and comfortable life is not possible. The paper attempts that how the UNO framed Universal Declaration of Human Rights (UDHR), various treaties which are promoting the better implementation of human rights across the world. Also to trace out the network of various mechanisms of the UNO regarding the protection and execution of human rights.

INTRODUCTION

Human rights are rights inherent to all human beings, whatever our nationality, place of residence, sex, ethnic origin, color, religion, language or any other status. We are all equally entitled to our human rights without discrimination. These rights are all interrelated, independent and indivisible. These rights are universality in nature. Universal human rights often expressed and guaranteed by law in the forms of treaties, customary international law, general principles and other sources of international law. International human rights law lays

UN CONTRIBUTION TO THE PROTECTION AND EXECUTION OF HUMAN RIGHTS : A STUDY.

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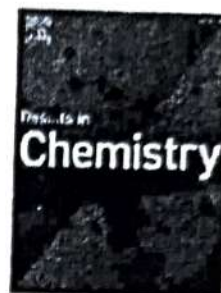
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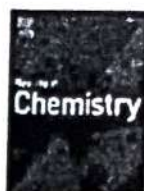
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Phase equilibria for binary mixtures of hexane with orthoxylene, metaxylene, and nonane with hexane at 101.3 kPa

G. Chandra Sekhar^{a,*}, Ming-Jer Lee^b

^a Department of Chemistry, Govt. degree & PG college (Affiliated to Sri Venkateswara university, Tirupati), Puttur, Chittoor (Dt), 517 583, AP, India

^b Department of Chemical Engineering, National Taiwan University of Science and Technology, 43-Keelung Road, Section-4, Taipei 106-07, Taiwan

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ABSTRACT

Experimental measurements of isobaric vapour, liquid equilibrium boiling point temperature were determined at 101.3 kPa as function of concentration for the two mixtures of hexane with orthoxylene, metaxylene and nonane with hexane by using a continuous recirculation type apparatus. The measured temperature, vapour and liquid concentration (T-x-y) results were correlated with the NRTL and the UNIQUAC models. Each binary mixture system has passed the thermodynamic consistency test of Herington. The activity coefficient values (γ) are greater than unity in three systems for all measurements. The systems studied in the present investigation are hexane with orthoxylene, metaxylene and nonane with hexane show relatively larger deviations from Raoult's law. All the systems studied here behave like non-ideal solutions. All binary systems investigated were found to be nonazeotropic in nature.

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1. Introduction

The knowledge of vapour-liquid equilibrium (VLE) properties of each constituent compound in the vapour phase was calculated by using the two-term virial equation of state incorporated with of mixtures is not only fundamentally but also practically important for process development. Separation of aliphatic and aromatic hydrocarbons is commonly encountered problem in the refinery industry. Recently, Gonzalez et al. [1] found that dimethylbenzenes can be extracted from a liquid mixture of dimethylbenzenes and hexane by using the ionic liquid 1-ethyl-3-methylimidazolium ethylsulfate, [EMim][ESO]. For the system of hexane + 1,4-dimethylbenzene, isothermal VLE data at 313.15 K have been reported by Coral [2].

Now a days Chemists and Chemical engineers have given great fundamental and practical importance to experimental measured data of excess thermodynamic & physical properties of pure liquids and binary liquid mixtures. These excess properties help one to get information related to the structure and composition of compounds and different types of interactions present in binary mixed solutions. Possessing the knowledge of phase equilibrium properties of binary liquid mixtures to researchers are fascinating, innovating and of great fundamental, practical importance, and industrial applications. The separation of aliphatic hydrocarbons with aromatic hydrocarbons in the refinery

industry is commonly encountered problem. To design industrial distillation equipment, it is necessary to have an appropriate and complete knowledge of vapour liquid equilibrium data on the binary liquid mixtures for both Chemists and Chemical engineers. In general, saturated hydrocarbons (alkanes) exhibit a comparatively low reactivity and inert, because their carbon bonds are relatively strong and stable and cannot be easily broken. Not like most other organic compounds which have functional groups, they possess no functional groups but possessing carbon and hydrogen only. Crude oil comprises of a mixture of liquid alkanes and other hydrocarbons. The most prominent commercial resources for alkanes are natural gas and gasoline [3].

Our recent research project is deals to the well-mannered study of liquid systems comprising of aliphatic saturated and aromatic hydrocarbons in terms of to their environmental significance. The experimental measured data in the direction of a practical point of view, are useful and helpful for the design of storage, method of mixing and process industrial equipment. This behavior attributed primarily to understand the specific interactions between unlike molecules of the present experimental measured systems. Our novel research project is dedicated to the systematic study of binary liquid systems containing modeling liquid fuel engines. Hexane is an example of saturated hydrocarbon (alkane). Hexane isomers are largely un reactive, because they are very non-polar and are most frequently used as an inert solvent in so many organic synthetic reactions. Hexanes being main constituents of gasoline and glues are used extensively for manufacturing of shoes, leather products and roofing materials. Additionally, Hexane is used as solvents to extract oils for cooking and cleaning agent for shoes, furniture and textile manufacturing industries.

* Corresponding author.

E-mail address: cgandhi30@gmail.com (G.C. Sekhar).

[†] Recognized as a research center by UGC-SEBO, Hyderabad & Sri Venkateswara university, Tirupati AP, India.

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- డా. యస్.పి. సుంజీవరెడ్డి సహాయ అచార్యులు, తెలుగు విభాగం, ప్రభుత్వ డిగ్రీ కళాశాల, ఎర్రగుంట్ల, కడప జిల్లా.

ప్రస్తావన :

మానవుని జీవితంలో అనేక సంఘటనలు జరుగుతూ ఉంటాయి. ఎట్టి సంఘటనలు జరిగినా, ఎలాంటి ఒడు దుడికులు కలిగినా వాటి నుంచి కలిగే మంచి ఫలితాలకు పొంగిపోక, చెడు ఫలితాలకు క్రుంగిపోక, మనోదైర్యంతో స్వపర భేదం లేకుండా, నిష్పాక్షికంగా సమాజ సమ్మతమైన ధర్మం మార్గాన పయనించే మానవుడు వ్యక్తిపరంగా, సమాజపరంగా ఒక విశిష్టమైన స్థానాన్ని పొందగలడు. ధర్మమార్గాన పయనించి విశిష్టమైన స్థానాన్ని పొందడానికి స్త్రీ పురుష భేదం లేదు. పుత్రులపై మమకారంతో కొన్ని సందర్భాల్లో అధర్మ స్థానాన్ని పొందడానికి స్త్రీ పురుష భేదం లేదు. పుత్రులపై మమకారంతో కొన్ని సందర్భాల్లో అధర్మ మార్గాన నడిచిన ధృతరాష్ట్రుడికన్నా, అవినీతులైన కుమారుల పట్ల పుత్ర ప్రేమకంటే ధర్మానికి ప్రాధాన్యత ఇచ్చిన ధర్మవేదికగా గాంధారి కవిత్రయ భారతంలో ప్రముఖమైన స్థానాన్ని పొందినట్లు కనిపిస్తుంది.

తల్లిదండ్రులతో గాంధారి "ధర్మం" :

గాంధారి అందుడైన ధృతరాష్ట్రుని తండ్రి మాట ప్రకారం వివాహం చేసుకోవడం స్పష్టమయింది. సహజంగా అంధత్వం కలిగిన భర్త కొరకు కృత్రిమ అంధత్వాన్ని ఆపాదించుకొన్న అర్థాంగిగా కనిపిస్తుంది. ఈ సందర్భంలో గాంధారికి పతిపై గల భక్తి, ప్రేమ స్పష్టమవుతున్నాయి. ఈ సందర్భంలో గాంధారి త్యాగనిరతి స్పష్టమవుతోంది. మాతృదేవోభవ, పితృదేవోభవ అనే ధర్మమార్గంలో నడిచింది. కాబట్టి తండ్రి కోరికను అనుసరించి ప్రవర్తించింది.

భర్త విషయంలో గాంధారి "ధర్మం" :

కృష్ణరాయభార సందర్భంలో ధృతరాష్ట్రునిచే విలిపించబడ్డ గాంధారి వచ్చి భర్తతో

"నీ పుత్రుడవనికు దగుట యెఱిగి,
యెఱిగి వాని వశంబున నేల పోయె
దీపు పాండవులకు నేమి ఇచ్చితేని,
నధ్వపడ నెవ్వరికి వచ్చు నదివ....."

అని వలికింది. అధిప అను సంబోధనలో రెండర్థాలు కన్పిస్తున్నాయని చెప్పవచ్చు మామూలుగా రాజా అని సంబోధనం ఒక అర్థం. మరొక అర్థంలో కురు సామ్రాజ్యధి పతిని కాబట్టి నీవు అధికారాన్ని ఉపయోగించి కుమారుని దండించి పాండవులకు రాజ్యాన్ని ఇవ్వవలసిందని సూచన. అధిప అను సంబోధనము సాభాప్రాయమని "జక్కా వేంకట రమణప్ప" చెప్పారు. అజ్ఞాపించడమే కాని బ్రతిమాడుట దృతరాష్ట్రునికి తగదన్న అభిప్రాయం ఈ పదం వలన స్ఫురిస్తుంది.

మూలంలో గాంధారి ధృతరాష్ట్రునితో అవినీతుడయిన దుర్యోధనునికి రాజ్యం లభించింది. కొడుకు పాపచింత తెలిసి నీవు వాని బుద్ధినే అనుసరించావు. వీడు కామక్రోధ మోహితుడు, లోభగ్రస్థుడు, దురాత్ముడు, మూఢుడు, దుస్సహాయుడు, నిన్ను బలవంతంగానైనా మరల్చడానికి అసాధ్యుడు. అట్లాంటి వానికి రాజ్యం ఇచ్చినందుకు తగిన ఫలితం వచ్చింది. సామము చేత తరించడానికి వీలయ్యే అవదవట్ల దండాన్ని ఎవడు ప్రయోగిస్తాడు అని వలికింది.

శత్రువులు దాడి చేయకుండా ఉండాలంటే పాండవు లతో కలిసి ఉండాలని, పాండవులు బలవంతులు కాబట్టి సామమార్గాన్నే పోవాలి. కాని దండాన్ని ప్రయోగించ రాదని హితబోధ చేసినట్లుగా మనకు కన్పిస్తుంది. కేవలం స్వప్రయోజనాన్ని ఆశించి వలికినట్లుగానే ఉంది కాని, అమెలోని నిష్కళంకమైన ధర్మగుణం బహిర్గతమవడం లేదు.

కె. వి.ఆర్. ప్రభుత్వ మహిళా కళాశాల



కర్నూలు, ఆంధ్రప్రదేశ్.

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Kakatiya University, Warangal District,
Telangana.

గారికి, ఆచార్య సూర్యాధనుంజయ్ గారికి, శ్రీ రక్కం కామేశ్వరరావు గారికి, శ్రీ జె.ఎస్.ఆర్.కె. శర్మ గారికి, డా॥ ఎం. ఇందిరాశాంతి గారికి, డా॥ వి. శ్రీదేవి గారికి, శ్రీ విజయ్ కుమార్ రెడ్డి గారికి, శ్రీ కె. శ్రీనివాసరెడ్డి గారికి, డా॥ కె. మాలకొండయ్య గారికి, ఆచార్య ఎండ్రూరి సుధాకర్ గారికి, ఆచార్య రామనాథంనాయుడు గారికి, డా॥ జి. అంజయ్య గారికి, ఆచార్య యోహాన్ బాబు గారికి, ఆచార్య మాడభూషి సంజీవకుమార్, గారికి, ఆచార్య జి. బాలసుబ్రహ్మణ్యం గారికి, ఆచార్య తప్పెట రామసుబ్బారెడ్డి గారికి, ఆచార్య చిగిచెర్ల కృష్ణారెడ్డి గారికి, డా॥ ఎస్. ఈశ్వరరెడ్డి గారికి, డా॥ కె.వి.ఎస్.డి. వరప్రసాద్ గారికి, డా॥ ఎం. అన్వర్ హుస్సేన్ గారికి, డా॥ వి.వి.ఎస్. కుమార్ గారికి, డా॥ పి. విజయ్ కుమార్ గారికి, డా॥ జమ్మన్న గారికి హృదయ పూర్వక ధన్యవాదాలు.

సదస్సు నిర్వహణలో సహాయ సహకారాలందించిన మా కళాశాల అధ్యాపకులు డా॥ కె.వి. మురళీకృష్ణ గారికి, శ్రీమతి జయలక్ష్మి గారికి, శ్రీ వి.వి. శేషారెడ్డి గారికి, డా॥ ఒబులపతి గారికి, శ్రీ సి. రమేష్ గారికి, శ్రీమతి సుబ్బరాజమ్మ గారికి, శ్రీమతి విజయభారతి గారికి, శ్రీమతి తలత్ పర్వీన్ గారికి, శ్రీమతి ఇంద్రావతి గారికి, డా॥ ఇర్పానా గారికి, డా॥ రజిని గారికి, శ్రీమతి శేఖరాణి గారికి, శ్రీమతి బి. ధనశ్రీ గారికి, డా॥ అరతి చక్ర గారికి ధన్యవాదాలు.

అంతర్జాతీయ సదస్సుకు సహకరించిన మా కళాశాల కార్యాలయ నిర్వహణాధికారి శ్రీ పి. విజయకుమార్ గారికి, జె.కె.సి. మెంటర్లు శ్రీ కె. ఈశ్వరయ్య మరియు స్వర్ణలత గార్లకు, ఈ సదస్సులో పత్ర సమర్పణ చేసిన సమర్పకులకు, వివిధ కళాశాలల నుంచి విచ్చేసిన అధ్యాపకులకు, పరిశోధకులకు, ఈ పుస్తకాన్ని సకాలంలో అందించిన భావవీణ సాహితీ మాస పత్రిక నిర్వాహకులు అయిన డా॥ బూసి వెంకటస్వామి గారికి మా హృదయపూర్వక కృతజ్ఞతలు.

ఈ అంతర్జాతీయ సదస్సును విజయవంతం చేయుటకు సహకరించిన మా విద్యార్థులకు, ఎందరో హితులకు, మరెందరో సన్నిహితులకు అందరికీ మాటలకందని మనఃపూర్వక శుభాభివందనాలు.

‘కన్యాశుల్క నాటకం - సమస్య - పరిష్కారం

- డా॥ యస్. సి. సంజీవ్ రెడ్డి, తెలుగు ఉపన్యాసకులు, ప్రభుత్వ డిగ్రీ కళాశాల, ఎర్రగుంట్ల, కడప జిల్లా.

ప్రస్తావన :

ప్రాచీన తెలుగు సాహిత్యమంతా సంస్కృతం నుండి, తెలుగులోకి అనువదించబడిన సాహిత్యం. ప్రాచీన తెలుగు కవులు, సంస్కృత ఇతి హాసాలను, తెలుగులోకి అనువదించారు. సంస్కృతంలోని ఏ ప్రక్రియనైనా తెలుగు కవులు శ్రావ్య కావ్యాలగానే రచించారు. దండి రచించిన (గద్యం) గద్య కావ్యం, దశకుమార చరిత్ర దానిని కేతన తెలుగులో శ్రావ్య కావ్యంగా - పద్య కావ్యంగా అనువదించాడు. సంస్కృతంలో కృష్ణ మిత్రుడు రచించిన తాత్త్విక నాటకం ప్రదోధ చంద్రోదయం దీనిని నంది మల్లయ్య, పుంటశింగన అనే జంట కవులు ఒక ప్రబంధంగా అనువాదం చేశారు. పిల్లల మర్రి పనివీరభద్రుడు కాళిదాసు అభిజ్ఞాన శాకుంతలాన్ని శృంగార శాకుంతలం అనే కావ్యంగా మార్చేశాడు. అంటే నాటకాలను నాటకాలుగా అనువదించలేదు అని అర్థం. సంస్కృతం లో ప్రపంచ ప్రసిద్ధి చెందిన నాటకాలు, తెలుగులోకి నాటకాలుగానే అనువదించబడకపోవడానికి చారిత్రక సామాజిక కారణాలు వున్నాయి. తెలుగు సాహిత్యం ప్రారంభమైంది. భారతదేశ చరిత్రలో మధ్యయుగం. ఈ కాలానికి నాటక ప్రదర్శన ఉన్నత వర్గాల చేతుల్లో నుంచి క్రింది వర్గాల వారి చేతుల్లోకి వచ్చింది. క్రింది వర్గాల వాళ్లు బ్రతుకు తెరువు కోసం నాటకాలు వేసే స్థితి దాపురించింది. ఆ రకంగా నాటకానికి సామాజిక గౌరవం తగ్గింది. అందుకే ప్రాచీన కవులు నాటకాలను, నాటకాలుగా అనువదించలేదు.

కన్యాశుల్క నాటకంలో రచయిత తీసుకున్న సమస్యలు, వాటికి ఆయన పరిష్కారాలు చెప్పాడా లేదా చెప్పివుంటే ఏ పరిష్కారాలు చెప్పివున్నారు అనే అంశాలను చర్చించడానికి ముందుగా ఒక మౌళికమైన సాహిత్య

సమస్యను చర్చించుకోవలసి వుంది. రచయితలు తమ రచనల్లో లేదా సమస్యలను పరిష్కారాలు కూడా చెప్పాలనా, అన్నదే ఈ మౌళిక సమస్య. దీని మీద రెండు రకాల అభిప్రాయాలు వ్యక్తం అవుతున్నాయి.

ఒకటి :

రచనలో అంతా రచయితే చెప్పకూడదు. సమస్యను అవిష్కరించి, పాఠకుడిలో ఆలోచనలు లేపే పరిష్కారాన్ని పాఠకులకే వదిలిపెట్టాలి. రచయిత పాఠకుడి వివేకం మీద విశ్వాసం వుంచాలి. సాహిత్యంలో సమస్యలకు పరిష్కారాలు వెదకటం తెలివి తక్కువ పని. దీనిని విమర్శ నాత్మక వాస్తవికత అంటారు.

రెండు :

రచయిత ఒక సామాజిక సమస్యను చిత్రించినప్పుడు దానికి పరిష్కారం చెప్పే బాధ్యత కూడా రచయితదే. పరిష్కారం చెప్పిన రచన పాఠకులను నడి సముద్రంలో వదిలేస్తుంది. ఇది సామ్యవాద వాస్తవికత.

రచయితలు పరిష్కారాలు చెప్పాలి :

రచయితలు సామాజిక సమస్యలను చిత్రించడమేకాక వాటికి పరిష్కారాలు కూడా చెప్పాలి. పరిష్కారాలు చెప్పి నంత మాత్రాన పాఠకులను అవమానించినట్లు భావించడం అర్థం లేని పని, సమస్యకు పరిష్కారాలు చెప్పటం ఆధునిక కాలంలో చర్చనీయాంశమైనది. కాని ప్రాచీన సాహిత్యంలో పురాణేతి హాసాలలో వున్నది ఇదే దుష్టశిక్షణ, శిష్ట రక్షణ అనేది సమస్యకు పరిష్కారం చెప్పేదిగా వున్నది. శిశుపాల వధ, వర కాసుర వధ, కీచకవధ, వంటివన్నీ సమస్యలకు పరిష్కారాలు చెప్పిన కథలే. కురుక్షేత్రం యుద్ధము, రామరావన యుద్ధం, కూడా సమస్యలకు పరిష్కారాలు చెప్పిన కథలే ఈ క్రమంలో ఆధునిక సాహిత్యాన్ని కూడా పరిశీలించినప్పుడు ఎన్నో కథలు, కవితలు,

నవలలు, నాటకాలు, సమస్యలకు పరిష్కారాలు చెప్పినవి కనిపిస్తాయి. అందువల్ల సాహిత్యంలో సమస్యలకు పరిష్కారాలు చెప్పటం రచయిత బాధ్యతగా గుర్తించాలి.

కన్యాశుల్క నాటకం, సమస్యలు - పరిష్కారాలు:

కన్యాశుల్క నాటకంలో సమస్య జీవితం మూఢనమ్మకాలు, మూఢచారాలతో కూరుకు పోవడం. దీనికి పరిష్కారము, సంఘ సంస్కరణ, కన్యా శుల్క నాటకంతో ఈ సంస్కరణే చిత్రింపబడింది.

స్త్రీలను పురుషులు అవమానించడం, మోస గించడం :

పూట కూళ్లమ్మను గిరీశం మోసం చేస్తున్నాడు. ఒక్క పూట కూళ్లమ్మనే కాదు అతుడు స్త్రీ జాతినే వచించేవాడు. వెంకుపంతులు కోడలకి ప్రేమ లేఖ వ్రాశాడు. పూట కూళ్లమ్మ దగ్గర డబ్బు తెచ్చి మధుర వాణి దగ్గర ఖర్చు పెడుతున్నారు. మధురవాణి దగ్గర అబద్ధాలు అన్నీ చెప్పి మోసం చేస్తున్నాడు. బుచ్చమ్మను సుబ్బు పెళ్లి తప్పించే నెపంతో, స్వార్థబుద్ధితో లేవదీసుకొని పోతాడు. ఇలాంటి గిరీశం అప్పటి సమాజానికి ఆధునిక వేళంలో వున్న చీడ పురుగు, అప్పటి సమాజానికి ఇతను ఒక సరికొత్త సమస్య దీనికి గురజాడ చెప్పిన పరిష్కారం ఏమిటి.

రామప్ప పంతులు మినాక్షిని నాశనం చేయడమే కాక ఆమె ప్రవర్తన బాగా లేదని తానే ప్రచారం చేస్తున్నాడు.

మధురవాణి కుటుంబాలను నాశనం చేసే స్త్రీగా కుటుంబాలు కలిగిన వాళ్లంతా ముద్ర వేశారు. సభ్య సమాజం అంతా ఆమెను ఒక అవాంఛనీయమైన వ్యక్తిగా చూస్తున్నారు.

అగ్నిహోతృవదాని, లబ్ధావదాని లాంటి వాళ్లకు కన్యాశుల్కం ఇవ్వటం కాని, తీసుకోవటం కాని, చిన్న పిల్లల్ని ముసలివాళ్ల, కిట్ట పెళ్లి చేయటం ఒక అనాగరికతగా, తోచటం లేదు, ఇవి ఇలాంటిది కన్యాశుల్కం నాటకంలో వున్న సమస్యలు. వీటిని గురజాడ ఎలా పరిష్కరించాడు.

సంస్కరణే గురజాడ పరిష్కారం :

గురజాడ పురాణాలలో లాగా దుర్మార్గుల్ని చంపే పరిష్కారం చెప్పలేదు. మార్మిజం చెప్పుతున్నట్లుగా, వర్గశత్రు నిర్మూలనను కూడా పరిష్కారంగా చెప్పలేదు. ఆయన సంస్కరణ యుగ రచయిత. సంస్కరణ వృత్తిలో మార్పును ప్రతిపాదిస్తుంది. బుద్ధి చెప్పటం, సున్నితంగా తిరుగుబాటు చేయటం, చదువు చెప్పటం వంటిది గురజాడ సాహిత్యంలో కన్పించే పరిష్కారాలు. వేమన చంప దగిన యట్టి శత్రువు చేతికి చిక్కినా, అతన్ని చంపకుండా చీ పో అనడమే చావుతో సమానమన్నాడు. మనవతా వాద రచయిత అయిన గురజాడ అప్పారావుకు వేమన ఆదర్శం అయితే గురజాడ ఈ కొద్ది మార్పు పరిష్కారానికే పరిమితం కాలేదు. స్త్రీ పాత్రలతో పెద్ద తిరుగుబాటే చేయించాడు. నేటి వర్గపోరాటానికి గురజాడ చిత్రించిన స్త్రీ పోరాటం తొలి రూపకంగా కనిపిస్తుంది. పూటకూళ్లమ్మ తనను వంచిస్తున్న గిరీశం మీద ప్రతీకారం తీర్చుకోవటానికి చీపురు కట్ట తీసుకొని మధురవాణి ఇంటికి వస్తుంది. వంచనకు గురి అవుతున్న మహిళలు, అందుకు బాధ్యులైన పురుషుల మీద తిరుగుబాటు చేయటం కన్యాశుల్క నాటకంలో ఒక ప్రధాన పరిష్కారం. అది పూట పూట కూళ్లమ్మతోనే ప్రారంభమైంది. తనను మోసం చేసిన రామప్ప పంతుల్ని పెళ్లాడమని మినాక్షి వెంటబడి తరుము తుంది. ఇందులో ఆమెకు మధురవాణి అంద వుంది. తనకు చెప్పకుండా, తన కూతురికి పెళ్లి నిశ్చయించిన భర్త మీద వెంకమ్మ బావిలో దూకి నిరసన తెలుపుతుంది. అత్యహత్య నా నిరసన అని ఈ వాళ స్త్రీ వాదుల వ్రాస్తున్న కవితలకు తొలి రూపం వెంకమ్మ బావిలో పడటం. తన ప్రమేయం లేకుండా, తనను వితంతువును చేసి జీవితాను భవమే లేకుండా చేసిన పురుషు స్వామ్య సమాజం మీద బుచ్చమ్మ తన చెల్లిలి పెళ్లి అవటం కోసం గిరీశంతో వెళ్లిపోతుంది. కన్యాశుల్క వివాహాలు చేసే అలవాటు వున్న అగ్నిహోత్రావు దానిని మధురవాణి మహిళంతో వైరాగ్య గీతం అలవిస్తూ తరిమి కొట్టిస్తుంది. అవిధేయు డైన భర్త కరటిక శాస్త్రి ఆయన

భార్య భర్త మీద కోపం తీర్చుకోవడానికి భర్తకు ఇష్టం లేని దొండకాయ కూరనే ప్రతిసారి వండిపెడుతుంది. మధురవాణి తనను హీనంగా చూసే నభ్య సమాజంలోని అసత్యతను అనేక రకాలుగా విమర్శించింది. తనకు ఏమీ సంబంధం లేకపోయినా సుబ్బి పెళ్లి తప్పించడంలో కీలక పాత్ర నిర్వహించి తన సామాజిక బాధ్యతను నిర్వహించింది. లజ్జావదానిని అతను అజ్ఞానాన్ని మన్నించి సంస్కరించే ప్రయత్నం చేసింది. రామప్ప వంతులు దుర్మార్గాలను ఎప్పటికప్పుడు ఎండగడుతూ వచ్చింది. తననే కాక అనేక మంది స్త్రీలను వంచించి, గిరిశం

మోసాన్ని సౌజన్యారావు వంతులు ముందు ప్రదర్శించి, చివరకు "పాపం అయ్యి బతక నీయండి" అన్నది. కన్యాశుల్క నాటకంలో రచయిత చూపించిన పరిష్కారాలలో తెల్లా ఉత్తమ పరిష్కారం మధురవాణి గిరిశంను 'బతకనీయ మనటమే'. వేశ్య పట్ల అశాస్త్రీయమైన అవగాహన కలిగిన సౌజన్యారావు వంతులకు తన వాద బలంతో అటకం కలిగిస్తుంది. మధురవాణి, నాటకంలో అమె చుట్టూ తిరుగు పాత్ర లేదు. మహిళలలో తిరుగు బాటు చేయించటం, వీలైన చోట సంస్కరించటం గురజాడ కన్యాశుల్క నాటకంలో చూపించిన పరిష్కారాలు.

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TRADE RELATIONS BETWEEN INDIA AND AFRICA: A STUDY

Dr.C. Ramana Reddy

Lecturer in political science,
Government Degree College,

NAGARI, Chittoor(Dist) . Andhra Pradesh(State).

ABSTRACT

Africa and India are separated by the Indian Ocean .The geographical proximity between the horn of Africa and the Indian sub – continent has played an important role in the development of the relationship since ancient times.

India has emerged as Africa's the largest trade partner behind China, EU & USA whilst Africa emerged as India's sixth the largest trading partner behind EU, China, UAE, USA & ASEAN. There are three elements to India's trade relations with Africa – increasing the volume of imports and exports between the two countries; Government support to the private sector, the diverse nature of India's economic engagement both government and Private, with Africa.

Bilateral trade jumped from \$5.5 billion in 2001 and \$90 billion by 2015 and it would increase \$200 billion by 2020. This is almost five times more than that of 2015. Regarding the imports and exports, African exports to India are growing at a rate of 32 % annually, with Indian exports to Africa at a rate of 23%. The top six African exports to India are Nigeria, South Africa, Angola, Egypt, Algeria and Morocco and account for 89% of total African exports by value to India, mainly due to exports of oil, gas, ores and gold. Trade is significantly more diversified across African countries at the product level and all exports from India seem to have some degree of technological input. The major challenges faced by exporters and importers from India and Africa are primarily : transport and logistics costs; poor business environment (lack of ease of doing business); corrupt practices; and access to trade finance. The major threat to India's trade relations with Africa is the pressure of China, USA and EU in Africa. Regarding trade strategy of USA is to reduce dependence of middle- east oil and hence they went for greater purchase of oil from Africa. China also has been offering soft loans which are being lapped up by capital starved African nations. The paper attempts the origin of India-Africa trade relations, its evolutionary growth, constraints in India-Africa trade and also what are the threats to it from the global competition especially from USA, China and EU.

Need of the study:

India- Africa relations are age old and it had date backed to BC. Lot of research already done on India-Africa relations. Now i would like to publish the paper on India-Africa trade relations in the post-cold war era because due to the globalization the volume of growth rate in India-Africa trade steadily increased especially in the Post 2000 era. So the paper attempt the following areas such as the recent trends in India-Africa trade relations, the favourable conditions in India-Africa trade growth and also what are the efforts taken by India in this regard. The paper also analyse the various constraints regarding India-Africa trade relations and also gives some remedies to overcome the constraints.

HYPOTHESIS

- To examine the brief historical background of India-Africa relations.
- To explore the brief political relations between India and Africa.
- To analyse the evolution of trade relations of India-Africa.
- To trace out the initiatives by India for trade development with Africa.
- To study the constraints and remedies to India-Africa trade.



వి.ఎస్.ఆర్ & ఎన్.వి.ఆర్ కళాశాల

(స్వయం ప్రతిపత్తి) - రీజిస్ట్రేషన్

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అంతర్జాతీయ అంతర్జాల సదస్సు (వెబినార్)

24, 25 ఆగష్టు 2020

తెలుగు సాహిత్యం - సమకాలీనత



ప్రధాన సంపాదకులు :

కె. వి. పద్మావతి

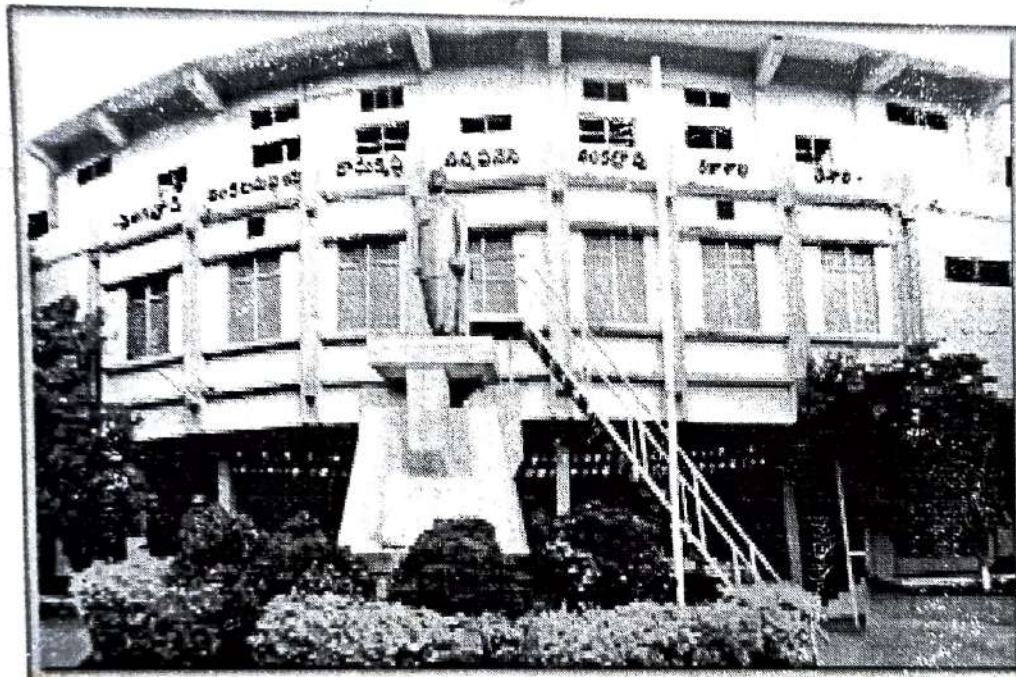
చైన్ ప్రెస్సిఫర్ & కాభాధిపతి, తెలుగు విభాగం, వి.ఎస్.ఆర్ & ఎన్.వి.ఆర్ కళాశాల, తెనాలి.



అంతర్జాతీయ అంతర్జాల సదస్సు (వెబినార్)

24, 25 ఆగష్టు 2020

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- డా॥ యస్.సి. సుంజీవరెడ్డి తెలుగు ఉపన్యాసకులు, ప్రభుత్వ డిగ్రీ కళాశాల, యర్రగుంట, (కడప జిల్లా).

సారాంశము :

గురజాడ రచించిన కన్యాశుల్క నాటకం ఆనాడు సమాజంలో వున్న కన్యాశుల్క దురాచారానికి వ్యతిరేకంగా వ్రాయబడింది. ఈనాడు సమాజంలో కన్యాశుల్కం లేదు. కాని ఆ నాటకం ఇంకా సజీవంగా నిలిచి వుంది. అందుకు గల కారణం కన్యాశుల్కం ఒక ఆధునిక మహాత్మిహాసం అని చెప్పవచ్చు. రామాయణ భారతాలు సమగ్రమైన రాచరిక వ్యవస్థను ప్రతిబింబించాయి. ఇవాళ రాజరిక వ్యవస్థ లేదు. కానీ రామాయణ భారతాలను నాటకాలుగా, సినిమాలుగా, సీరియల్స్ గా, ఈనాటికి ప్రజలు ఆదరిస్తున్నారు. కన్యాశుల్క నాటకం కూడా ఆధునిక మహాత్మిహాసం అని ఈ వ్యాసంలో వివరించడం జరిగింది.

కన్యాశుల్కం సమస్య నశించిపోయినా నాటకం ఇంకా నిలిచి ఉండటానికి కారణం అది ఒక ఆధునిక మహాత్మిహాసం.

ఏ రచనకైనా శాశ్వతత్వం అనేది ఉండదు. ఎక్కువ కాలం ఒక రచన ప్రజలలో నిలిచి ఉంటే అది అంత గొప్పది అవుతుంది. ఒక వ్యవస్థను చిత్రించిన రచన ఆ వ్యవస్థ నశించిపోగానే తన స్థానాన్ని కోల్పోతుంది. ఆ తర్వాత కూడా దానిని ప్రజలు ఆదరిస్తూ ఉంటే దానికి వేరే కారణాలుంటాయి. రామాయణం, భారతం సమగ్రమైన రాచరిక వ్యవస్థను ప్రతిబింబించాయి. ఇప్పుడు రాచరికం లేదు. కానీ రామాయణ భారతాలను నాటకాలుగా, సినిమాలుగా, సీరియల్స్ గా, భారతీయులు చూస్తునే ఉన్నారు. పురాణాలుగా వింటూనే ఉన్నారు. ఇందుకు రెండు కారణాలు చెప్పుకోవచ్చు.

1. మన వ్యవస్థ మారినా మన ఆలోచనలు, అభిరుచులు మారినా, ఆలోచనల పరంగా, భావజాలం పరంగా మనం గతంలో నివశించాము.

2. ఒకనాటి వ్యవస్థను అప్పటిరచనలుగ భారత, రామాయణాలు ఒక సమగ్ర చిత్రంగా మనకు అందివ్వడం వస్తువు నశించినా రూపం ఇంకా ఆకర్షణీయంగా ఉండడం మరొక కారణం కావచ్చు.

ఈనాడు ఏ స్త్రీ కూడా ద్రౌపదిని అనుసరించడానికి సిద్ధంగా లేదు. అలాగే సీతలాగా భర్త అగ్నిలో దూకమంటే సిద్ధంగా లేదు. అయినా సీత, ద్రౌపదుల గాథలను నేటి మహిళల ఆసక్తిగా వింటూనే ఉన్నారు. ఇందుకు కారణం ఆ పాత్రలోని సజీవ గుణాలే.

ఈ అవగాహనతో కన్యాశుల్కం గురించి ఆలోచిస్తే ఈ నాటకం కన్యాశుల్క సమస్య నశించిపోతున్న రోజుల్లో వ్రాయబడింది. బాల్యవివాహాలు బలంగా ఉన్న రోజుల్లో వ్రాయబడింది. ఇది ఒక బ్రాహ్మణ కుటుంబ కథ విజయ వ్రాయబడింది. ఇది ఒక బ్రాహ్మణ కుటుంబ కథ విజయ నగర ప్రాంత భాషలో వ్రాయబడింది. అయినా నేటికి ఆ నాటకానికి ఆదరణ తగ్గలేదు. వరకట్నం ప్రారంభంలో వచ్చిన కాళ్ళకూరి నారాయణరావు గారి వరవిక్రయ నాటకం ఆ రోజుల్లో విఫలమయిపోయింది. వరకట్న సమస్య హద్దు మీరిపోయి స్త్రీల పాలిట శత్రువుగా మారిన ప్రస్తుత సందర్భంలో ఆ నాటకానికి ఎంతో విలువ ఉండాలి. కానీ ఆ నాటకం విద్యార్థుల పాఠ్య గ్రంథాల్లో తప్పా దాలి. కానీ ఆ నాటకం విద్యార్థుల పాఠ్య గ్రంథాల్లో తప్పా ప్రజల హృదయాలలో స్థానం సంపాదించలేక పోయింది. కన్యాశుల్క నాటకం బాల్య వివాహాలు నశించి పోయినా ఇంకా చూస్తునే ఉన్నారు. అది ఒక బ్రాహ్మణ కుటుంబ కథ అయినా కులాల కఠినంగా జనమంతా చూస్తునే ఉన్నారు. కన్నడం, తమిళం లాంటి భారతీయ భాషల్లోనే కాక ఆంగ్లంలోకి, రష్యన్ భాషలోకి కూడా ఈ నాటకం అనువదించబడింది. ఇందుకు కారణాలు ఏమిటి?

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INDIA'S ROLE IN THE SAARC

Dr.C.Ramana Reddy,
HOD, Dept. of. Political Science,
Govt. Degree & P.G. College,
NAGARI, Chittoor(District),
Andhra Pradesh- 517290.

ABSTRACT

The establishment of SAARC in 1985 was a milestone in the institutionalization of regional cooperation in South Asia, a region betraying a glaring paradox; abundant in human and natural resources but mired in poverty as well. SAARC aims at accelerating the process of socio-economic development in member states through "collective self-reliance". Its creation, therefore, kindled hopes amongst South Asian Peoples for a better future marked by prosperity and freedom from want. SAARC, has, however, failed to live up to such expectations. India, the predominant power in the region, in its commitment to SAARC, has had tried to ensure that the latter deliver the good by focussing on poverty alleviation, infrastructure development, regional economic integration and proper harnessing region's resources, encouraging people-to-people contact and by taking appropriate measures in this regard. India has urged the member states to put aside their rivalries and concentrate their attention energies on regional development delivering win-win results. Despite this, the hostility between two developed regional powers- India and Pakistan –as well as the in-built asymmetry in the Indo-Centric region and the consequent threat perception among smaller countries of the region as frustrated India's sincere but cautious attempts to make SAARC a meaningful and productive regional organisation.

This article examine India's approach to SAARC since its inception manifesting in its perception attitude towards SAARC and its role in and contribution to SAARC. It will also deal with India's initiatives toward creating a better future to SAARC.

NEED OF THE STUDY

South Asian Association of Regional Cooperation (SAARC) was established in December 8, 1985 in Dhaka, Bangladesh, for the cause to achieving regional cooperation among the South Asian countries. It is the prototype of other regional arrangements like EU, ASEAN, and APEC etc.. Being the biggest country in the SAARC in terms of size and population India is playing prominent role in it. The present study focussed on India's initiatives towards the formation of SAARC also the study to trace out to strengthen India's contribution for a better future of SAARC.

HYPOTHESIS

1. To study the origin and evolutionary growth of SAARC.
2. To examine the aims and objectives of SAARC.
3. To analyse the India's significance in the SAARC.
4. To traced out the challenges faced by SAARC.

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A REVIEW ON IONIC LIQUIDS-THEIR CLASSIFICATION, CHARACTERISTICS AND APPLICATIONS

V PRABHAKAR RAO, G CHANDRA SEKHAR*

Department of Chemistry, Govt. Degree & PG College, PUTTUR, AP

Abstract

Ionic liquids (ILs) have emerged as an environmentally friendly alternative to the volatile organic solvents. Being designer solvents, they can be modulated to suit the reaction conditions, therefore earning the name "task specific ionic liquids." Though primarily used as solvents, they are now finding applications in various fields like catalysis, electrochemistry, spectroscopy and material science to mention a few. The present review is aimed at exploring the classification of ILs, their physical properties and applications in various fields.

Key words

Ionic liquids, task specific ionic liquids, magnetic ionic liquids, valorization, tribology, electrochemical window, designer solvents.

1. Introduction

Ionic liquid (ILs) is defined as a salt with melting point below the boiling point of water. Most of the ionic liquids are composed of organic cation and inorganic anions. In order to be liquid at room temperature, the cation should preferably be unsymmetrical. Now a days, volatile organic solvents (VOS) creating increasing air pollution are common reaction media for many chemical processes. VOS cannot be easily separated from the desired reaction products and difficult to recycle. In view of awareness of the deteriorating environment, researches are directed on developing alternative environmental friendly solvent systems to replace traditional volatile organics. Within this context, the interest of ionic liquids (ILs) as "green" solvents has come up as these have extremely low vapour pressure, high thermal stability, which also offers advantages such as ease of containment, product recovery and recycling ability. ILs have been implemented as solvent systems in chemical reactions, synthesis, separations, extractions, electro analytical applications and chemical sensing, among many others. Also, they have high ionic character that enhances the reaction rates to a great extent in many reactions. Keeping in view, the enormous advantages of ILs, this review article briefly describes the meaning of ILs, history, characteristics, applications.

2. Ionic liquids

Ionic liquid (IL) is a salt in the liquid state. In some contexts, the term has been restricted to salts whose melting point is below some arbitrary temperature, such as 100 °C. These substances are variously called liquid electrolytes, ionic melts, ionic fluids, fused salts, liquid salts or ionic glasses [1-3]. Any salt that melts without decomposing or vaporizing usually yields an ionic liquid. Any ionic substance [for example Sodium chloride (NaCl), melts at 801 °C melts at usually at high temperatures; this is because the ionic bond is quite strong. So, ionic substances have limited applications as most of the reactions are performed at room temperatures. This is where the ionic liquids play a vital role as they have ionic characteristics and at the same time are in liquid state.

Research Article

Avula Venkateswarlu, Sangapatnam Suneetha, Macherla Jayachandra Babu, Jorige Girish Kumar, Chakravarthula Silva Krishnam Raju, and Qasem Al-Mdallal*

Significance of magnetic field and chemical reaction on the natural convective flow of hybrid nanofluid by a sphere with viscous dissipation: A statistical approach

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Abstract: Hybrid nanofluid, which is a combination of Propylene Glycol (PG) – Water (H_2O) admixture and paraffin wax and sand, may be utilized as a standby for PG and (H_2O) blend in solar thermal framework. Objective of this article is the exploration of the dissipative flow propylene-glycol and water mixture based hybrid nanofluid by a sphere with chemical reaction and heat source parameters. MATLAB in-built solver bvp4c is utilized to exhibit the impacts of various parameters on regular profiles including temperature. Correlation coefficient is utilized to elucidate the impact of pertinent parameters on engineering parameters of concern, such as, surface friction factor. Main findings of this work are magnetic field is having a negative association with friction factor and chemical reaction is consuming a significant positive relationship with Sherwood number. It is witnessed that heat source and Eckert number are useful to meliorate the fluid temperature. Furthermore, validation is performed among our results and earlier published outcomes. Good agreement is detected.

Keywords: Hybrid nanofluid, sphere, bvp4c, correlation coefficient, magnetic field, chemical reaction, viscous dissipation

Nomenclature

μ	Dynamic viscosity [Kg/ms]
ρ	Density of the fluid [Kg m ⁻³]
β_T	Volumetric coefficient of thermal expansion
a	Radius of the sphere
β_C	Volumetric coefficient of diffusion expansion
g	Acceleration of gravity
ν	Kinematic viscosity [m ² s ⁻¹]
T	Dimensional temperature of fluid [K]
k	Thermal conductivity [W m ⁻¹ K ⁻¹]
C	Dimensional concentration of fluid [mol m ⁻³]
f'	Dimensionless velocity
θ	Dimensionless temperature of fluid
ρC_p	Heat capacity
ψ	Dimensional stream function
u, v	Velocity components in x, y directions [m s ⁻¹]
η	Similarity variable
f	Dimensionless Stream function
Φ	Dimensionless concentration of fluid
Gr	Local thermal Grashoff number
Gc	Local diffusion Grashoff number
λ	Buoyancy ratio parameter
Pr	Prandtl number
Ec	Eckert number
Sc	Schmidt number
K_r	Chemical reaction parameter
D_m	Molecular diffusivity [m ² s ⁻¹]
M	Magnetic field parameter
Q_0	Volumetric rate of heat source parameter
k_0	Chemical reaction parameter (dimensional)
ξ	Dimensionless coordinate

*Corresponding Author: Qasem Al-Mdallal; Department of Mathematical Sciences, United Arab Emirates University, P.O. Box 15551, Al Ain, Abu Dhabi, United Arab Emirates; Email: q.almdallal@uaeu.ac.ae

Avula Venkateswarlu, Sangapatnam Suneetha: Department of Applied Mathematics, Yogi Vemana University, Kadapa – 516005, Andhra Pradesh, India

Macherla Jayachandra Babu, Jorige Girish Kumar: Department of Mathematics, S.V.A. Government College, Srikalahasti – 517644, Andhra Pradesh, India

Chakravarthula Silva Krishnam Raju: Department of Mathematics, GITAM School of Science, GITAM University, Bangalore-Campus, Karnataka



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COVID-19: A LESSON FOR THE WORLD

Dr. C. Ramana Reddy, Asst. Professor
Govt. Degree & P.G. College
Nagari - 517590
Chittoor Dt 1
Andhra Pradesh (State)

ABSTRACT

Covid-19 has emerged as a global health threat due to its accelerated geographic spread over the last two years. This article reviews the current state of knowledge concerning the origin, transmission, diagnosis and management of covid-19. It has emerged from China and the virus is believed to have been acquired from zoonotic source and spreads through direct and contact transmission. The symptomatic phase manifests with fever, cough and myalgia to severe respiratory failure. The diagnosis is confirmed using reverse transcriptase PCR. Management of covid-19 is mainly by supportive therapy along with mechanical ventilation in severe cases. Preventive strategies form the major role in reducing the public spread of virus along with successful disease isolation and community containment. At present second wave corona virus drastically spreading in India. Although India has been taking effective corona containment measures the disease is not yet under the control.

NEED OF THE STUDY

COVID-19 as the virus is caused by the novel corona virus. There have been millions of cases of COVID-19 and lakhs of deaths across the world and WHO has declared it a pandemic. The pandemic has destructed all sectors on the globe. In view of the comprehensive destruction caused by COVID-19 the paper attempts to create awareness among the people about the disease and also depict the origin, causes for spreading the disease, adverse effects and a few advantages. The paper also covers the causes for the spread of corona virus second wave and also proposed a few suggestions to contain the corona virus second wave in India.

HYPOTHESIS

1. To trace out the origin and spread of COVID-19
2. To understand the features of COVID-19
3. To analyze the preventive measures to avoid the COVID-19
4. To evaluate the losses and few advantages of COVID-19

INTRODUCTION

COVID-19 pandemic is tragically affecting people's health, lives and the means of livelihood. It is also affecting the economy and environment across the globe. First wave corona virus almost decreased at the end of 2020 but the second wave started in the beginning of 2021. It has reached first place in this regard.

As a specific family of viruses, COVID-19 virus first originated in Wuhan city, China, was declared a pandemic on March 11, 2020 by World Health Organization (WHO). According to WHO it is caused by the newly discovered corona virus, most people got infected and experience mild to moderate respiratory illness and recover without requiring special treatment.

THE SPREAD OF COVID-19

The COVID-19 spreads mainly when an infected person is in close contact with another person. Small droplets and aerosols containing the virus can spread from an infected person's nose and mouth as they breath, cough, sneeze, sing or speak. Other people are infected if the virus gets into their mouth, nose or eyes. The virus may also spread via contaminated surfaces, although this is not thought to be the main route of transmission. The exact route of transmission is rarely proven conclude but infection mainly happens when people are near each other for long enough, people who are infected can transmit the virus to another person up to two days before they themselves



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Georgios M. Kontogeorgis, PhD, MSc



Ultrasonic velocities and densities have been measured for the ternary system of water, iso-propanol and pyridine as a function of composition at 303.15 K and at atmospheric pressure. From these data, experimental compressibilities and excess compressibilities have been calculated. The excess compressibilities are negative throughout the concentration range of pyridine. These results have been analyzed on the basis of the variations in ultrasonic velocities, compressibilities and excess compressibilities. The presence of weakly bonded alcohol+pyridine structures are noticed in the mixtures of pyridine and iso-propanol. The results are discussed in the light of the formation and breakdown of clathrate-like structures and complexes in binary and ternary mixtures.

Research article Open access

Thermochemistry of nano-phased titanium dioxides relevant to energy application: A Review

Yaowen Wang, Tao Feng, Xinbo Li, Liping Li

Article 100033



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Abstract

Abstract

Polymorphs of titanium dioxides have found extensive applications in energy fields such as photocatalytic hydrogen generation and batteries. Further research on the thermochemistry of titanium dioxides should be conducted to attain a more detailed understanding of correlations among the steps of synthesis-structure-properties-performance paradigm for achieving controlled functionality. In this review, we briefly highlight important developments in polymorph structures, experimental accesses, stabilities, and thermodynamic data for nano-phased TiO_2 . We emphasize the important roles of surface hydration and structural symmetry on the stability of TiO_2 in the context of photocatalysis and lithium-ions batteries. Because analogues of TiO_2 phases have many important applications, the relevant results summarized in this work may have broad implications for the prediction of functionalities from the viewpoint of



Ultrasonic studies in the ternary mixtures: Water + Iso-propanol + Pyridine at 303.15 K

P. Babu^{a,*}, N. Prabhakara Rao^b, G. Chandra Sekhar^{c,*}, P. Bhanu Prakash^a

^a Department of Physics, Government Degree College, Palamuru-517 408, AP, India

^b Department of Physics, Sri Venkateswara University, Tirupati-517 502, AP, India

^c Department of Chemistry, Government Degree College, Puttur-517583, AP, India

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ABSTRACT

Ultrasonic velocities and densities have been measured for the ternary system of water, iso-propanol and pyridine as a function of composition at 303.15 K and at atmospheric pressure. From these data, experimental compressibilities and excess compressibilities have been calculated. The excess compressibilities are negative throughout the concentration range of pyridine. These results have been analyzed on the basis of the variations in ultrasonic velocities, compressibilities and excess compressibilities. The presence of weakly bonded alcohol-pyridine structures are noticed in the mixtures of pyridine and iso-propanol. The results are discussed in the light of the formation and breakdown of clathrate-like structures and complexes in binary and ternary mixtures.

1. Introduction

Liquids and liquid mixtures have been widely used in processing and product formulation in many industrial applications. Thermodynamic and transport properties of the liquids provide useful information about physical forces acting between the molecules of the same substance in pure liquids and molecules of different substances in liquid mixtures.

Properties such as speed of sound or surface tension and their variation with temperature and composition of the ternary mixture are useful to design engineering processes and in chemical and biological industries. Moreover, a survey of literature has shown that there are no reports on experimental data on speeds of sound in ternary system consisting of water, iso-propanol and pyridine. In addition, alkanols and pyridines were widely used in a variety of industrial and consumer applications and hence, knowledge of their physical properties is also of great importance from a practical point of view.

In recent years, much effort has been made with the measurement and interpretation of the ultrasonic properties of liquids and liquid mixtures. The ultrasonic studies are of great importance in helping to understand the nature and extent of the patterns of molecular aggregation that exist in liquid mixtures, resulting from intermolecular interactions [1–5].

The measurement of the speed of sound is the only direct method to determine the isentropic compressibility, which then provides further access to related thermodynamic properties of the liquids and liquid mixtures. Speed of sound measurements are one of the widely used

techniques in the investigation of liquids and are essential in construction and for the validation of fundamental equations of state [6]. As the speed of sound is related with the thermodynamic properties of liquids, the absorption of ultrasound waves explores the energy dissipation caused by different irreversible processes taking place in liquids during propagation of ultrasound waves. Studies on acoustic properties contribute significantly to improve the knowledge of the microscopic and macroscopic properties of liquids in mixtures. Recently, many researchers [7–10] have studied the acoustic properties of ternary liquid mixtures at different temperatures and also the applications of ultrasonic waves in improved oil recovery in oil and gas industry.

Intensive research work based on sound velocity measurements has long been carried out to investigate the behaviour of liquids and liquid mixtures. The non-linear behaviour of ultrasound velocities, isentropic compressibilities and related parameters of liquid mixtures with changing mole fractions is attributed to the difference in size of the molecules and strength of interaction. Ultrasound study of thermodynamic properties of binary liquid mixtures has been made by several authors. The work is scanty in ternary systems. Ultrasonic studies in ternary systems are presented in this research article.

In the present investigation, ternary system consisting of water, iso-propanol and pyridine has been studied in detail at 30^o C. Ultrasonic velocities and densities are measured and from this data, adiabatic compressibilities are estimated. The variations in the ultrasonic velocities, compressibilities and excess compressibilities are discussed as a function of composition of the ternary mixture. Throughout the work the concentration of one of the component is varied keeping the mole ratios

* Corresponding authors.

E-mail addresses: drbhat4@gmail.com (P. Babu), svgaadi13@gmail.com (G.C. Sekhar).

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భార్య భమన్ సాహిత్యం - సమాలోచన



అంతర్జాల అంతర్జాతీయ సదస్సు
21 & 22 ఫిబ్రవరి 2022



భావోద్ధిత ప్రత్యేక సంచిక

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నిర్వహణ:



తెలుగు విభాగం

మద్రాసు విశ్వవిద్యాలయం

మెరినా ఆవరణ, చెన్నై, తమిళనాడు.

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విశ్వానాథం



తెలంగాణ విభాగం

మాత్రాసు విశ్వవిద్యాలయం

మొదటి భాగం, చివరి భాగం

నీవే మైనా చేయగలవు

- డా॥ యస్. సి. సుంజీవ రెడ్డి, తెలుగు ఉపన్యాసకులు, ప్రభుత్వ డిగ్రీ కళాశాల, జమ్మలమడుగు, కడప జిల్లా.

కళాప్రపూర్ణ, మహాకవి బిరుదాంకితులు డా॥ బోయి భీమన్న గారు వదువెరిగిన వండితులు, బాలీయ లావములు మానవత్వము తొణికిసలాడు రచనలు చేయుట వీరి ప్రత్యేకత భీమన్న గారి పాటల తోట నుండి తీసుకున్న గేయం 'నీవేమైనా చేయగలవు' మానవుడు మంచి మనసుతో దైవాన్నయినా దర్శించగలడు. ఆ మనస్సు వచిత్రంగా ఉండాలి. సంకల్పం దృఢంగాను, ఉన్నతంగాను ఉండాలి. మానవుడు ఏమైనా సాధించ గలడు. మిగిలిన జీవులకన్నా మనస్సునే దానికి ఆలోచించే శక్తి మానవునికి పరిమితం కనుక దానిని వినియోగించి దేశప్రగతి, మానవాళి అభ్యున్నతికి నీవేమైనా చేయగలవు అవి ప్రజలను వెన్ను తట్టి చెప్పుచున్నారు. మనస్సును మళ్ళిస్తే పురోగతి, దాని బాటన నడిస్తే ఆధోగతి, దాని మంచి బాటను నడిపించే సంకల్పము మానవునికి కలదని రచయిత హెచ్చరిస్తున్నారు. ఈ భావముతో వ్రాసిన గేయ ఖండిక 'నీవేమైనా చేయగలవు' వేదాంత సంబంధమైన గుఢార్థాన్ని ఇముడ్చుటలో డా॥బోయి భీమన్న గారి ప్రజ్ఞాశోకలము ఈ రచనలో కనిపిస్తాయి.

మనస్సు :

భీమన్నపే ఏకు దైవం, అన్నీ అదే అన్నింటిలో ప్రసాదించేది మనసే. మనసే సాధించే సాధనం, మానవుని ప్రజ్ఞ అంటే తెలివి తేటలు, శక్తి సామర్థ్యములు ప్రగతికి మూలం. మానవ జీవిత విర్రాజానికి మానవుడే విర్రాక అతని పుణ శాంతులకు, అనందానికి, సేఖ్యానికి కర్త అతడే. మనం చేసే ప్రతి పనిని మనస్సు పరిశీలిస్తుంది. అంటే మనమే మన మనస్సు. మనవి దైవంగా మారితేగాని, మనమే దైవంగా రూపొందదు. కనుక మనవి పమాజంలో మంచి పనులు పరోపకారం చేస్తుండాలి. పహాభదత వద్దంపై నిరభయ మనస్సు, మానవుడు విద్యలోనూ విజ్ఞానంలోనూ వేయి రేకుల వద్దంలా

వికసించాలి. ఏ విధంగా అయితే రేకులన్నీ విడివిడిగా ఉన్న ఒకే పద్మానికి చెంది ఉంటాయో ఆ విధంగానే చదువులో పరిశోధనలు వేరు వేరుగా ఉన్నా వాటికి మూలం మానవుడు కాబట్టి మానవ శ్రయస్సు ముఖ్యం. పద్మానికి సువాసన సహజం మానవ ప్రవృత్తికి, విజ్ఞానానికి శాంతి, పురోగతి పరితంగా ఉండాలి. ప్రకాంతతో కూడిన మావతావాద పరిమళం వ్యాపించాలి. మానవ శేషస్సుకు మూలకారణం మధురమైన మనోవివ్యాసమే! మనస్సు ఎన్ని రకాలుగా ప్రవర్తిస్తుందో చెప్పలేము. అయితే ఆ మనస్సు మధురంగా విహరించి మానవత్వాన్ని వ్యాపింప జేయాలి. మనస్సును గెలిస్తే మనో వేగం కూడా పార్యమే. పూర్వకాలంలో మనో వేగం కలవాళ్ళు ఉన్నట్లు తెలుస్తుంది. అందని నక్షత్ర సమూహాలను మానవుడు అందుకుంటున్నాడు దానికి కారణం మనస్సును గెల్చుకోవటమే! మంచి మనస్సుతో పురుషోత్తముని కూడా గెలుప వచ్చు.

విశ్వం :

మనస్సు వచిత్రమైన కొలదీ ప్రపంచం అంతా ఒక్క కుటుంబం అనే భావన కలుగుతుంది. ప్రేమ తప్ప మరేకటి ఉండదు. వర్షమానవ సౌభ్రాతృత్వం ఏక నిస్తుంది. ఆరీతి వద్యము వికసించిన కొద్దీ పరిమళం వ్యాపిస్తుంది. ఏ పరిమళమైనా నరే వేగం పెరిగే కొద్దీ విశ్వం వ్యాకోచిస్తుంది. విశ్వం ఎలా పుట్టింది అనే దానికి ఇంతవరకు సంతృప్తికరమైన సమాధానం లేదు. అధ్యాత్మిక విషయం లోపలికి వెళితే, ఎట్లా అర్థంకాదో, అధునిక శాస్త్రానికి లోపలి కంటా వెళితే, ఎట్లా అర్థంకాదో. చివరకు సైన్స్, మతం చెప్పేది ఒకలాగానే ఉంటాయి. ఇలాంటి చోటనే మతం, సైన్స్ కలుస్తాయి.

విశ్వం అంటే భూమి, చంద్రుడు గ్రహాలు, నక్షత్రాలు, గెలాక్సీలు మొదలైన వస్తువులు, వాటి మధ్య వుండే ఈ

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Structural, morphological and luminescent studies on Sm^{3+} doped strontium tin phosphate nanopowder

Y. Nirmal Rajeev, K. Venkatarao, B.V. Naveen Kumar, L. Bhushan Kumar, Sandhya Cole



Structural, morphological and luminescent studies on Sm^{3+} doped strontium tin phosphate nanopowder

Y. Nirmal Rajeev^{a,b}, K. Venkatarao^{a,c}, B.V. Naveen Kumar^{a,d}, L. Bhushan Kumar^{a,*}, Sandhya Cole^{a,e}

^a Acharya Nagarjuna University, Nagarjuna Nagar, Guntur 522510, India

^b Department of Physics, V.R. Siddhartha Engineering College, Vijayawada 520007, India

^c Department of Physics, Government Polytechnic, Khosuru, Guntur 522410, India

^d Dept. of Physics, Sri Vishnu Engineering College for Women (A), Bhimavaram 534202, India

^e Dept. of Physics, Government Degree College, Jammalamadugu 516434, India

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ABSTRACT

Sm^{3+} doped Strontium tin phosphate ($\text{SrSn}(\text{PO}_4)_2$) nanopowder was synthesized using the Solid State Reaction (SSR) method, a well-known commercial technology for device applications. The synthesized nanopowder was characterized by using Powdered X-Ray Diffraction (P-XRD), Field Emission Scanning Electron Microscopy (FESEM) with Energy Dispersive X-ray Spectroscopy (EDS), Fourier Transform Infrared Spectroscopy (FT-IR), Photoluminescence (PL) and Photometric measurements. The average crystallite size of the prepared nanopowder was estimated by XRD using Debye-Scherrer's equation which is around 18 nm. FESEM images show the non-uniformly distributed biscuit-like nano-flakes morphology of the prepared nanopowder. FT-IR analysis confirms the existence of phosphate group ions in the sample. PL spectra recorded for the synthesized nanopowder under 401 nm excitation showed three emission bands with the transition at 601 nm and the highest intensity in the Orange region. Photometric parameters such as Colour Rendering Index (CRI), Colour Correlated Temperature (CCT) and Colour purity of the synthesized nanopowder were also measured and. The prepared nanopowder has CRI of 54% with CCT 2017K and colour purity 97.8% which is an excellent material for LEDs and luminescent devices application.

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1. Introduction

Phosphors are being processed intensively in recent years as they find many applications in lighting and display systems. Aluminates, silicates, and nitride-based phosphors have been most widely used for decades. But Phosphate phosphors are a broad class of chemicals with features that span the entire spectrum of material science and physics. Phosphate compounds possess a complex structure with multiple sites for divalent and trivalent cations to occupy [1]. These Phosphate group phosphors play a very crucial role as a good host, not only serving as a house for optically active ions but also taking the lead as luminous materials due to their superior qualities such as easy availability,

environmental favorable, sufficient large bandgap, low phonon frequency, easiness of synthesis, charge and thermal stability [2,3].

Rare earth (RE) metal ions are often employed as activators in luminescent materials [4,5]. Due to their chemical stability and ease of manufacture, RE-activated phosphate-based phosphors have been extensively explored for usage in LEDs (Light Emitting Diodes), display monitors, waveguide lasers, scintillators, solar concentrators, solid-state lasers, fiber optics as amplifiers, optical data storage, radiation attenuation materials and X-Ray imaging technologies and undersea communications [6–8]. Among the RE-Lanthanide ions (Ln^{3+}), Samarium ion (Sm^{3+}) is one of the fascinating trivalent ions that acts as an activator for most of the phosphors which generate reddish-orange emission arising due to $^4\text{G}_{5/2} \rightarrow ^6\text{H}_j$ (where $j = 5/2, 7/2, \text{ and } 9/2$) transitions [9]. LEDs are futuristic light sources with a flexible model, high efficiency, energy storage and pollution reduction [10]. The photometric factors such as CIE Chromatic Colour Co-

* Corresponding author.

E-mail address: sandhya.cole@gmail.com (S. Cole).

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Photocatalytic activity of hierarchical CTAB-assisted TiO₂ nanoparticles for polluted water treatment using solar light illumination

Y. Nirmal Rajeev, C. Maria Magdalane, G. Ramalingam, L. Bhushan Kumar, Norah Alwadai & M. S. Al-Bunahi

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Abstract

A solvothermal method was used to make titanium (TiO₂) nanoparticles templated with cetyltrimethylammonium bromide (CTAB). X-ray diffraction (XRD), transmission electron microscope (TEM), Fourier transform infrared (FT-IR), optical studies (UV-Vis DRS), and energy-dispersive spectrum (EDS) were used to characterise these prepared anatase phases titania particles (EDS). The results of the calculated mean crystalline sizes using XRD and TEM analysis showed that the nanomolecule range 5–15 nm is in good agreement. Photocatalytic studies on CTAB-assisted TiO₂ nanoparticles were also carried out, and the results revealed that the CTAB-assisted TiO₂ nanoparticles had higher efficiencies than the other metal oxide. The decomposition was achieved to be nearly 95% at about 180 min of time for Congo red dye solution with the addition of titania catalyst and H₂O₂ in neutral medium. The results obtained from photocatalytic studies confirmed the stability and reusability of the TiO₂ photocatalyst for several practical applications.

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Photocatalytic activity of hierarchical CTAB-assisted TiO₂ nanoparticles for polluted water treatment using solar light illumination

Y. Nirmal Rajeev^{1,2} · C. Maria Magdalane³ · G. Ramalingam⁴ · L. Bhushan Kumar⁵ · Norah Alwadai⁶ · M. S. Al-Buriah⁷

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Abstract

A solvothermal method was used to make titanium (TiO₂) nanoparticles templated with cetyltrimethylammonium bromide (CTAB). X-ray diffraction (XRD), transmission electron microscope (TEM), Fourier transform infrared (FT-IR), optical studies (UV-Vis DRS), and energy-dispersive spectrum (EDS) were used to characterise these prepared anatase phases titania particles (EDS). The results of the calculated mean crystalline sizes using XRD and TEM analysis showed that the nanomolecule range 5–15 nm is in good agreement. Photocatalytic studies on CTAB-assisted TiO₂ nanoparticles were also carried out, and the results revealed that the CTAB-assisted TiO₂ nanoparticles had higher efficiencies than the other metal oxide. The decomposition was achieved to be nearly 95% at about 180 min of time for Congo red dye solution with the addition of titania catalyst and H₂O₂ in neutral medium. The results obtained from photocatalytic studies confirmed the stability and reusability of the TiO₂ photocatalyst for several practical applications.

Keywords Nanostructure · Photocatalytic · CTAB · Template · Anatase · Solvothermal route

1 Introduction

The living standard of humans has excelled due to the usage of various conventional natural resources like coal, natural gas and petroleum. The industrial extraction of such nonrenewable end products generated energy crisis and environmental problems [1, 2]. Among the environmental issues, water, soil and air pollutions are of significant concern [3]. Industrial pollutants from various organic productions were released into the environment, which may lead to the foremost environmental crisis. Therefore, the reduction of these pollutants is a first necessity among the researchers in recent years via low-cost and straightforward processes. Removal of environmental impurities and organic contaminants by photocatalytic degradation under UV-visible light irradiation has become a hot spot nowadays. Azo dye, like Congo red dye, was more frequently used as a coloring agent in paper, cotton and several other industries. This carcinogenic effluent discharges from industries and pollute the aquatic ecosystem. As a result, the major challenge among the researchers was to identify a suitable metal oxide catalyst such as SnO₂, TiO₂, ZnO and VO₂ for the treatment of polluted water with an effective method [4]. Among these metal oxides, TiO₂ attained much significance due to its role

✉ G. Ramalingam
ramanloyola@gmail.com

✉ M. S. Al-Buriah
mohammed.al-buriah@ogr.sakarya.edu.tr

¹ Department of Physics, Acharya Nagarjuna University, Guntur 522510, India

² Department of Physics, V.R. Siddhartha Engineering College, Vijayawada 520007, India

³ Department of Chemistry, St. Xavier's College (Autonomous), Tirunelveli 627002, India

⁴ Quantum Materials Research Lab (QMRL), Department of Nanoscience and Technology, Alagappa University, Karaikudi 630001, India

⁵ Department of Physics, Government Degree College, Jammalamadugu 516434, India

⁶ Department of Physics, College of Science, Princess Nourah bint Abdulrahman University, P.O. Box 84428, Riyadh 11671, Saudi Arabia

⁷ Department of Physics, Sakarya University, 54100 Sakarya, Turkey