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Papers published in journals: Academic year 2017-18

Dr. Vikas Nathan

Journal of Molecular Liquids
Volume 231, April 2017, Pages 647-654

Molecular interaction studies of antibiotic drug Doxycycline Hyclate with aqueous mannitol using volumetric and acoustic methods

Shashi Kant Sharma, Vikas Nathan, Dinesh Kumar, Kamal Kishore

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Highlights

- Molecular interactions between Doxycycline Hyclate and mannitol are studied.
- The volumetric and acoustic methods are used to interpret results.
- Temperature variation of parameters studied
- Solute-solvent interactions are present.
- Doxycycline Hyclate behaves as a structure maker in water-mannitol system.

Abstract

The behaviour of Doxycycline Hyclate (DH) in aqueous mannitol solution was studied to explore molecular interactions at different temperatures. The volumetric and acoustic studies were used for investigating the interactions of drug Doxycycline Hyclate in water and aqueous mannitol system. The Density (ρ) and ultrasonic velocity (u) of Doxycycline Hyclate in water and in (0.1, 0.2 and 0.4) mol·kg^{-1} aqueous solutions of mannitol have been measured at (305.15, 310.15 and 315.15K) temperatures and atmospheric pressure. The density data was analysed with the help of Masson's equation. The positive value of (Φ_v^0) for DH indicates solute-solvent interactions The solute-solute interactions were determined from Masson's coefficient, (S_v) in water-mannitol system at different temperatures. The ultrasonic velocity data of DH in water and water-mannitol system were used to determine adiabatic compressibility (β), intermolecular free length (L_f), and specific acoustic impedance (Z). The structure making/breaking behaviour of DH in water

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Dr. Vikas Nathan

Journal of Molecular Liquids
Volume 247, December 2017, Pages 75-83

Molecular interaction studies of L-alanine and L-phenylalanine in water and in aqueous citric acid at different temperatures using volumetric, viscosity and ultrasonic methods

Dinesh Kumar, Shashi Kant Lomesh, Vikas Nathan

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Highlights

- Molecular interactions between L-alanine/L-phenylalanine and aqueous citric acid are studied.
- Temperature variation of partial molar volume, Jone-Dole's coefficient B, adiabatic compressibility are studied.
- Solute-solvent interactions predominate over solute-solute interactions.
- L-Alanine behaves as structure breaker whereas L-phenylalanine behaves as a structure maker in water-citric acid system.

Abstract

Densities, ultrasonic speeds and viscosities of L-alanine and L-phenylalanine in water and in 0.1 mol·kg^{-1} aqueous citric acid solutions were measured over the temperature range (298.15 to 313.15)K with interval of 5K at atmospheric pressure. From these experimental data apparent molar volume, limiting apparent molar volume and the slope, partial molar expansibilities, adiabatic compressibility, transfer volume, Falkenhagen coefficient, Jone-Dole's coefficient, the temperature derivative of Jone-Dole's coefficient, intermolecular free length, specific acoustic impedance, and molar compressibility were calculated. The results are interpreted in terms of solute – solute and solute-solvent interactions in these systems. It has also been observed that L-alanine acts as a structure breaker whereas L-phenylalanine acts as a structure maker in aqueous citric acid.

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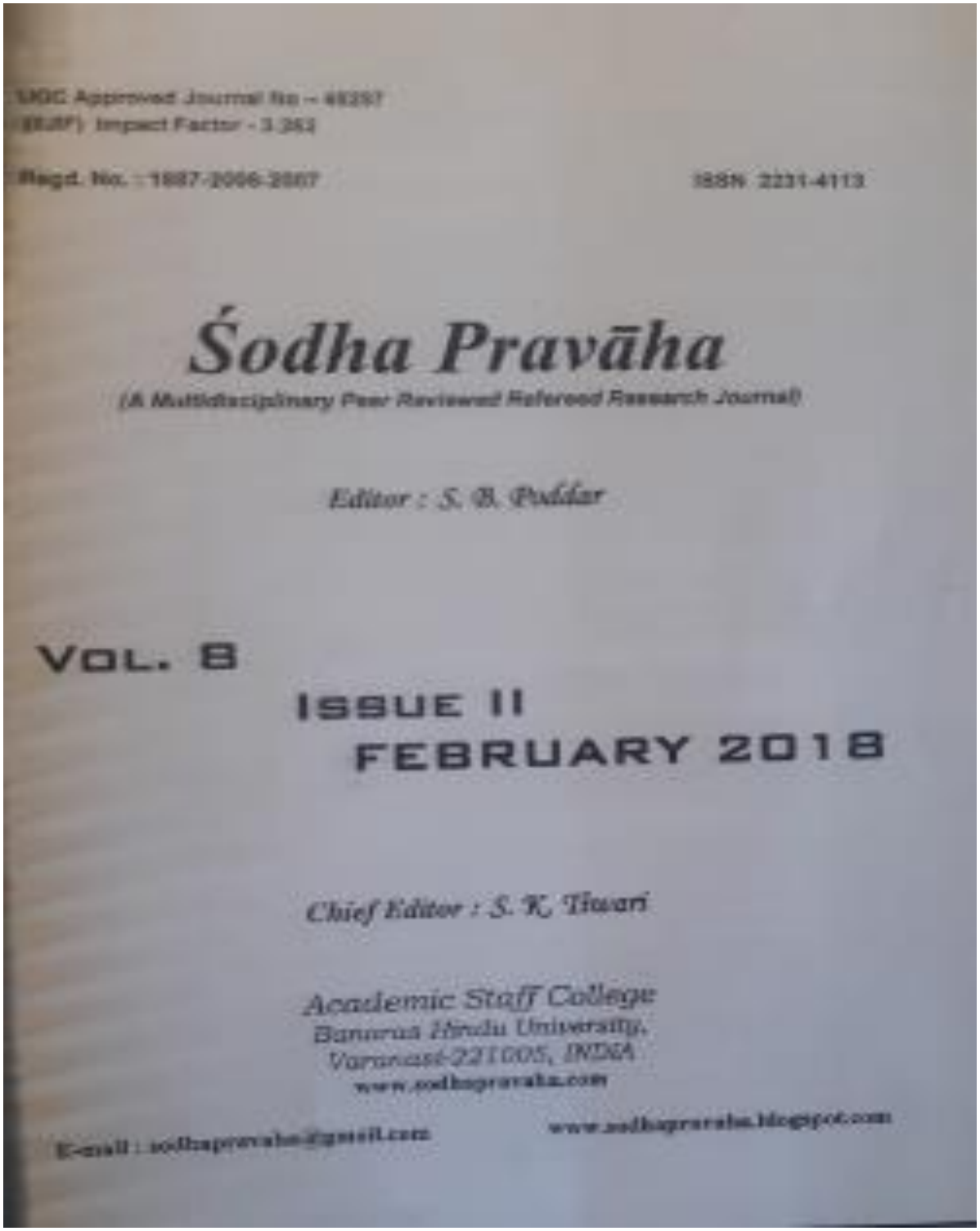

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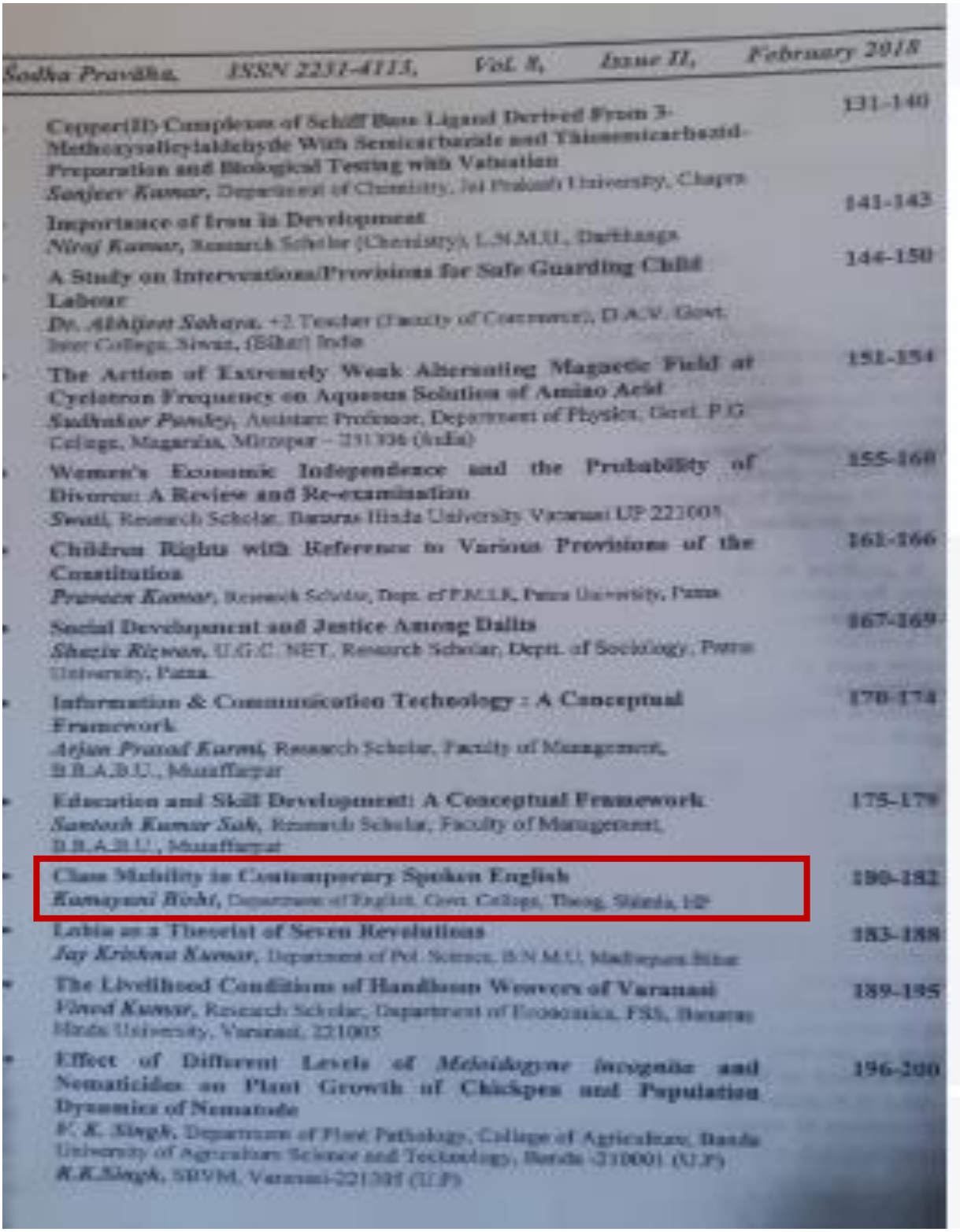

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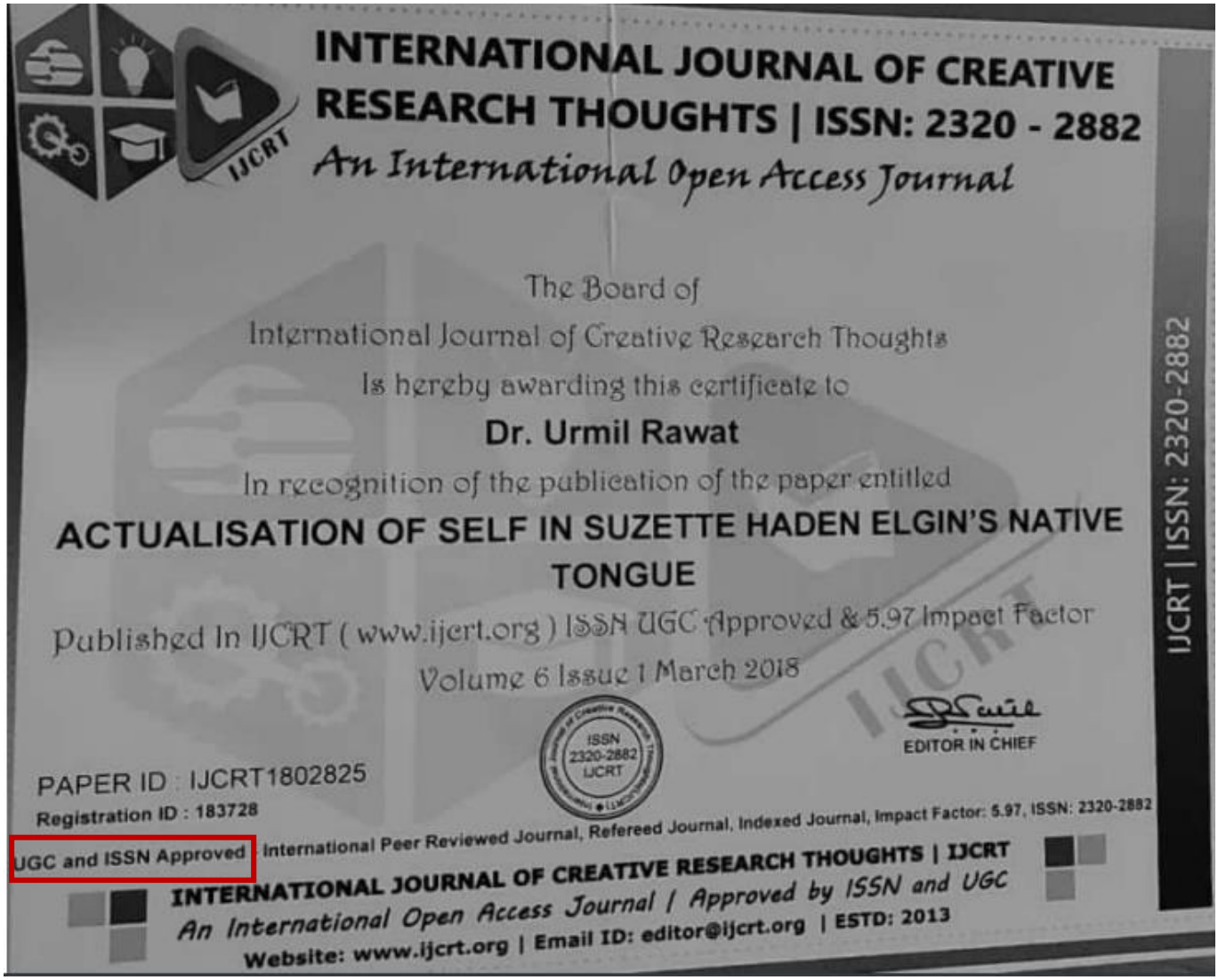

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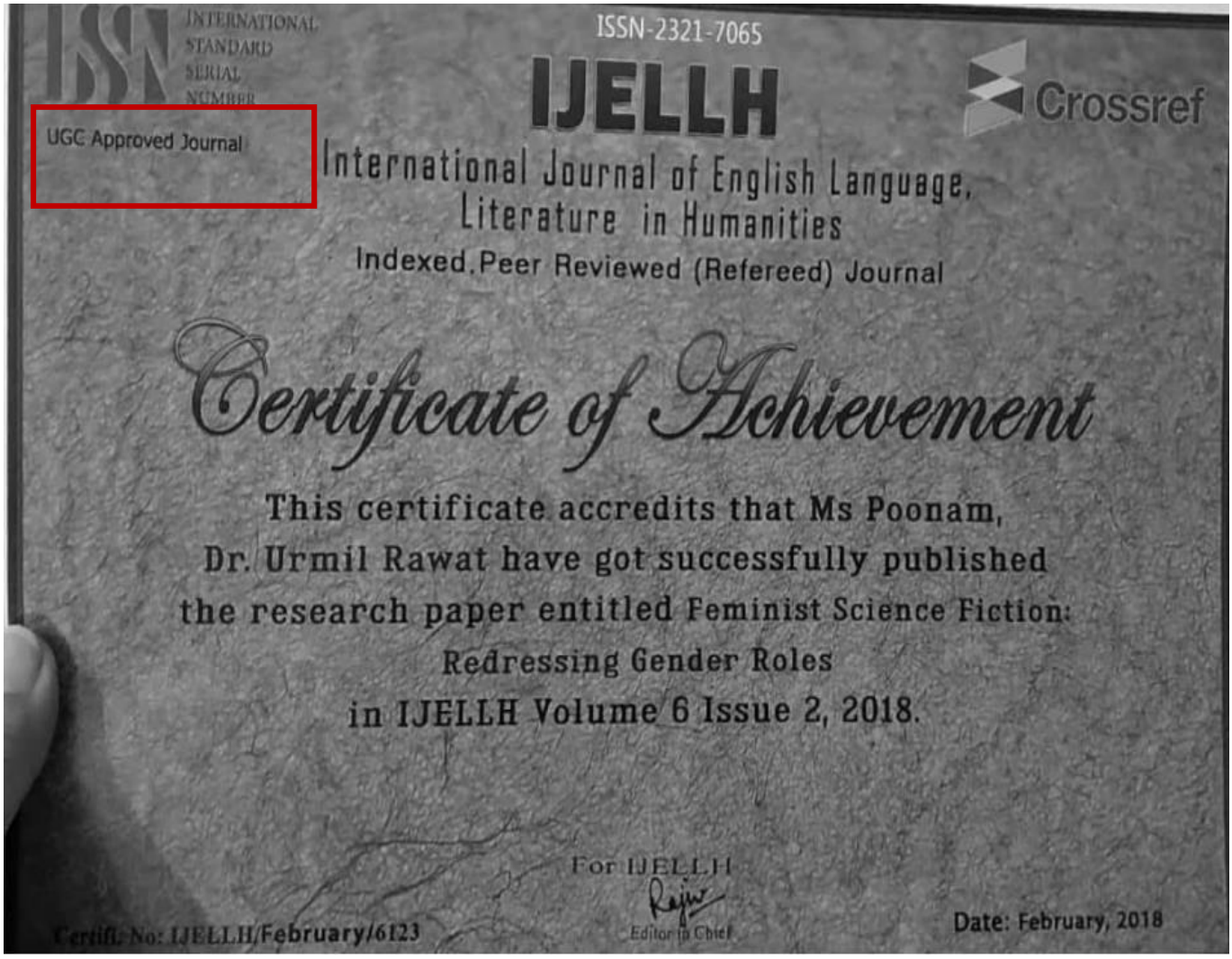

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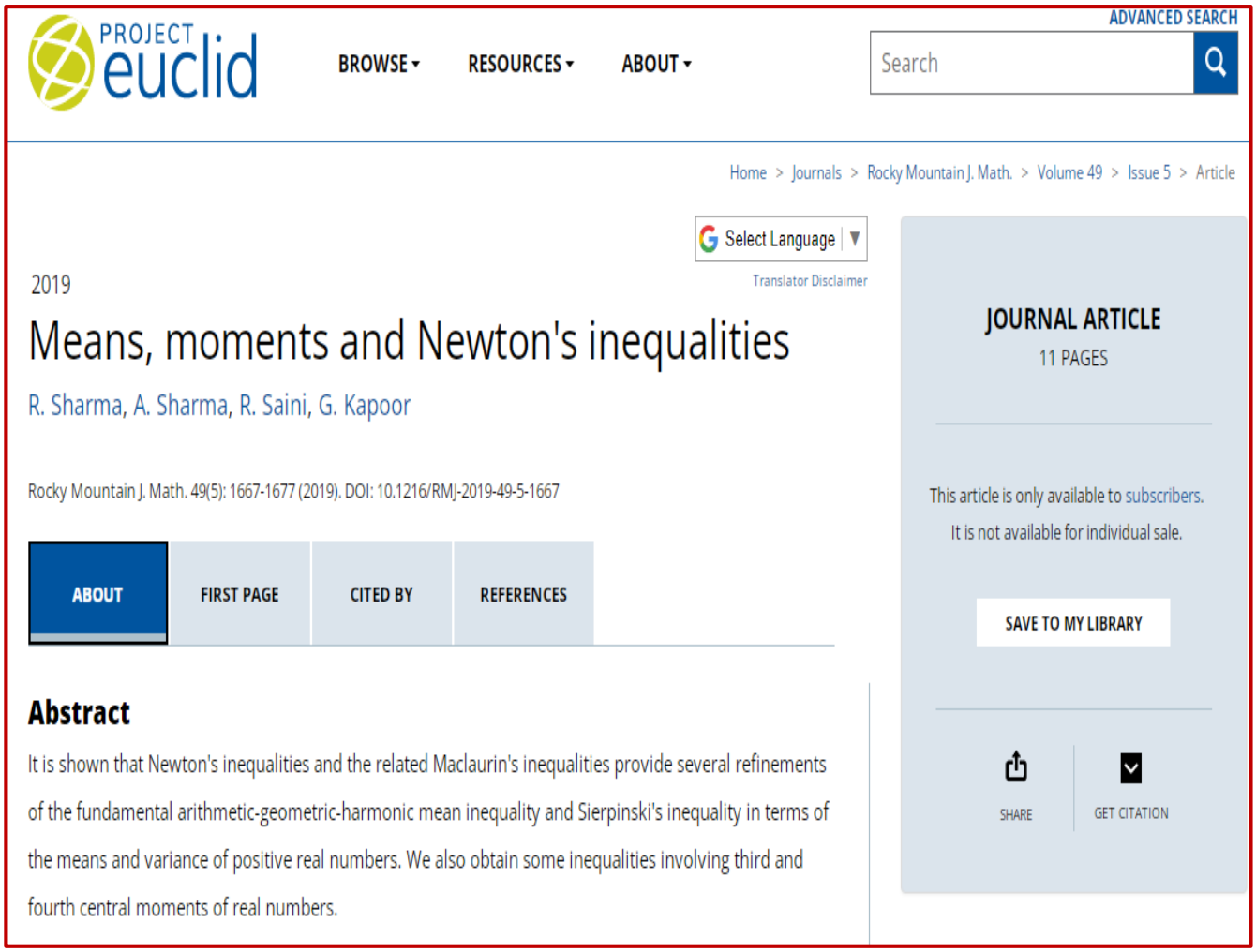

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Means, moments and Newton's inequalities

R. Sharma, A. Sharma, R. Saini, G. Kapoor

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Abstract

It is shown that Newton's inequalities and the related Maclaurin's inequalities provide several refinements of the fundamental arithmetic-geometric-harmonic mean inequality and Sierpinski's inequality in terms of the means and variance of positive real numbers. We also obtain some inequalities involving third and fourth central moments of real numbers.

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ROCKY MOUNTAIN
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Volume 49, Number 5, 2019

MEANS, MOMENTS AND NEWTON'S INEQUALITIES

R. SHARMA, A. SHARMA, R. SAINI AND G. KAPOOR

ABSTRACT. It is shown that Newton's inequalities and the related Maclaurin's inequalities provide several refinements of the fundamental arithmetic-geometric-harmonic mean inequality and Sierpinski's inequality in terms of the means and variance of positive real numbers. We also obtain some inequalities involving third and fourth central moments of real numbers.

1. Introduction. Let $x_1, x_2, \ldots, x_n$ denote n real numbers. Their rth moment and rth central moments are, respectively, the numbers

$$m'_r = \frac{1}{n}\sum_{i=1}^{n} x_i^r \tag{1.1}$$

and

$$m_r = \frac{1}{n}\sum_{i=1}^{n}(x_i - m'_1)^r, \tag{1.2}$$

where $r = 1, 2, \ldots$. Note that $m_1 = 0$, m'_1 is the arithmetic mean and m_2 is the variance of n real numbers $x_1, x_2, \ldots, x_n$. It is customary to denote m'_1 and m_2, respectively, by A and s^2. The geometric mean (G) and harmonic mean (H) of n positive real numbers $x_1, x_2, \ldots, x_n$ are, respectively, the numbers

$$G = \left(\prod_{i=1}^{n} x_i\right)^{1/n} \quad \text{and} \quad H = \left(\frac{1}{n}\sum_{i=1}^{n}\frac{1}{x_i}\right)^{-1}.$$

The kth elementary symmetric function C_k of $x_1, x_2, \ldots, x_n$ is the sum of the products taken k at a time of different x_i's. The kth elementary

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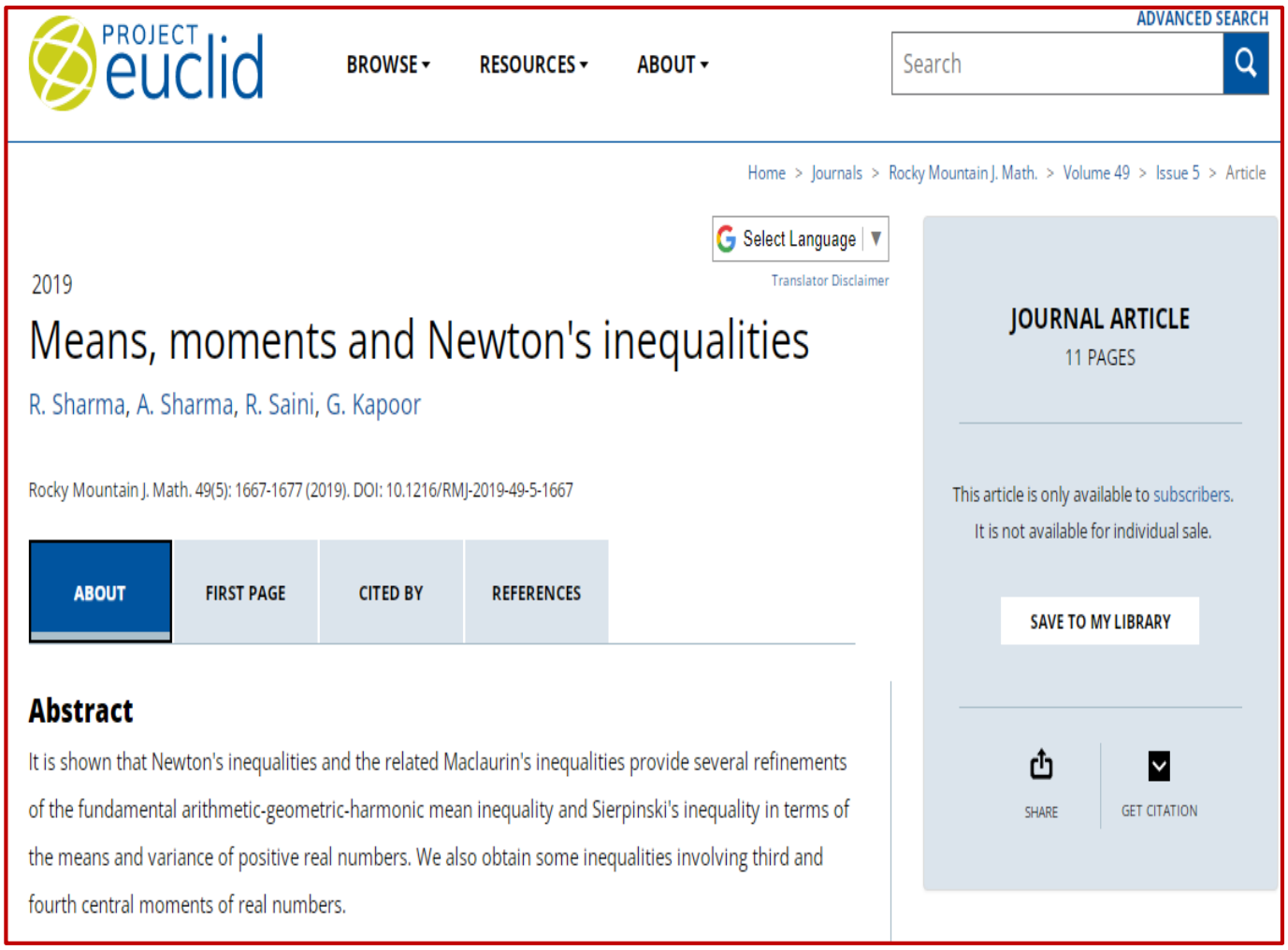

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ABSTRACT. It is shown that Newton's inequalities and the related Maclaurin's inequalities provide several refinements of the fundamental arithmetic-geometric-harmonic mean inequality and Sierpinski's inequality in terms of the means and variance of positive real numbers. We also obtain some inequalities involving third and fourth central moments of real numbers.

1. Introduction. Let $x_1, x_2, \ldots, x_n$ denote n real numbers. Their rth moment and rth central moments are, respectively, the numbers

$$m'_r = \frac{1}{n}\sum_{i=1}^{n} x_i^r \tag{1.1}$$

and

$$m_r = \frac{1}{n}\sum_{i=1}^{n}(x_i - m'_1)^r, \tag{1.2}$$

where $r = 1, 2, \ldots$. Note that $m_1 = 0$, m'_1 is the arithmetic mean and m_2 is the variance of n real numbers $x_1, x_2, \ldots, x_n$. It is customary to denote m'_1 and m_2, respectively, by A and s^2. The geometric mean (G) and harmonic mean (H) of n positive real numbers $x_1, x_2, \ldots, x_n$ are, respectively, the numbers

$$G = \left(\prod_{i=1}^{n} x_i\right)^{1/n} \quad \text{and} \quad H = \left(\frac{1}{n}\sum_{i=1}^{n}\frac{1}{x_i}\right)^{-1}.$$

The kth elementary symmetric function C_k of $x_1, x_2, \ldots, x_n$ is the sum of the products taken k at a time of different x_i's. The kth elementary

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Physicochemical approach to study the solute-solute and solute-solvent interactions of drug Levofloxacin hemihydrate in aqueous sorbitol solutions at different temperatures: Volumetric, acoustic and conductance studies

Shashi Kant Lomesh, Madhu Bala, Vikas Nathan

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Highlights

- Different possible interactions between LFH in water and aqueous sorbitol systems are studied.
- The various possible interactions are interpreted using volumetric, acoustic and conductance studies.
- Solute-solvent interactions predominate over solute-solute interactions.
- All these studies confirmed the structure maker behaviour of LFH in water and water-sorbitol system.

Abstract

The interactions of third generation fluoroquinolone antibiotic drug Levofloxacin hemihydrate (LFH) with the naturally occurring polyol i.e. sorbitol as a function of temperature have been investigated by volumetric, acoustic and conductance methods. Densities, speeds of sound and conductance values of LFH (0.001–0.01 mol·kg^{-1}) in water and aqueous sorbitol (0.002, 0.004 and 0.006 mol·kg^{-1}) have been measured at different temperatures (300.15, 305.15, 310.15 and 315.15 K). The experimental density data was used to calculate apparent molar volume (Φ_V), limiting apparent molar volume (Φ_V^o), Masson's coefficient (S_V), partial molar expansibilities (Φ_E^0), transfer volume $\Delta_{tr}\Phi_V^o$ and

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Volumetric and acoustic methods for investigating molecular interactions of antibiotic drug doxycycline hyclate in water and in aqueous solution of sodium chloride and potassium chloride at different temperatures (293.15–313.15) K

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ABSTRACT

The solution properties of antibiotic drug Doxycycline Hyclate (DH) were investigated to explore molecular interactions with aqueous NaCl and KCl solutions around their physiological cell concentrations at different temperatures. Apparent molar properties i.e. apparent molar volume (Φ_V) and apparent molar isentropic compression (Φ_K) for DH within the concentration range (0.0020–0.0140) mol·kg^{-1} in water and in (0.005, 0.012 and 0.140) mol·kg^{-1} aqueous NaCl and KCl solutions were calculated from experimentally measured densities (ρ) and Ultrasonic speed (u) values at T = (293.15, 298.15, 303.15, 308.15 and 313.15) K temperatures and at P = 0.1 MPa pressure. The data of apparent molar properties were utilised to obtain various derived parameters such as limiting apparent molar volume, (Φ_V^o), limiting apparent molar isentropic compression, (Φ_K^o), limiting apparent molar volume of transfer, $\Delta\Phi_V^o$, limiting apparent molar isentropic compression of transfer, $\Delta\Phi_K^o$, limiting apparent molar expansibility, Φ_E^o, and thermal expansion coefficient, α. The structure making/breaking ability of DH in aqueous NaCl and KCl were determined on the basis of Hepler's Equation i.e. on the basis of sign of $(\frac{d^2\Phi_V^o}{dT^2})_P$. The results obtained from all these thermodynamic parameters were discussed in terms of solute-solute and solute-solvent interactions in these systems. The volumetric, compressibility and acoustic data suggests the existence of strong solute-solvent interactions in the studied systems.

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1. Introduction

Drug as defined in pharmacology, a chemical substance used in the treatment, cure, prevention or diagnosis of disease or used to otherwise enhance physical or mental well-being [1,2]. Physicochemical properties of drugs are important to understand the drug action at the molecular level [3,4]. The binding tendencies of biologically important molecules in the presence of various solvents can be interpreted by studying their physiochemical properties [4–6]. Interaction of drugs with physiologically important molecules in the living organism i.e. in blood, membranes, intra-and extra-cellular fluids are of utmost significance to understand the pharmacodynamics and pharmacokinetics of drugs [7,8]. These interactions may include ionic, covalent, charge transfer, hydrogen bonding, ion–dipole interactions, or hydrophobic hydration [9,10]. Several thermodynamic and physiochemical measurements for drugs in aqueous solutions and in liquid mixtures have been carried out to understand the nature of molecular interactions existing in these systems [11,12]. The study of aqueous phase chemistry of drugs in the presence of biologically important molecules including proteins, amino acids, peptides, electrolytes, carbohydrates, metal ions, colloidal micelles [13] and bionanomaterials as drug delivery tools [14] etc. by thermodynamic and volumetric methods constitute an important topic of research due to their important function in the fields related to biology, medicine, target drug delivery, cosmetics etc. [15].

The Tetracyclines referred to as broad-spectrum antibiotics, due to their ability to fight many different types of bacteria (Gram-positive and Gram-negative bacteria), made up of four fused rings are one of the most important class of drugs, as they are not only used as antibiotic agents but also have novel multiple therapeutic potential [16,17]. DH, (see Fig. 1(a) and (b)) a non Newtonian, synthetic broad spectrum antibiotic used for the treatment of many bacterial infections, such as urinary tract infections, acne, gonorrhoea, Anthrax, Lyme disease, Plague, *P. falciparum* (malaria) and periodontitis is an active tetracycline class medicament that shows powerful effect against infections caused by several micro-organisms groups such as Haemophilus ducreyi, Yersinia pestis, Legionella, Chlamydia, Mycoplasma and Borrelia [18,19].

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Influence of Ho–Ni–Mn substitution on the structural and magnetic behavior of Ba–Sr Co_2Z-type nanohexaferrites extension up to Mossbauer investigations

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Abstract

A series of Co_2Z-type Ba–Sr nanohexaferrites $Ba_{1.5}Sr_{1.5}Co_{2-z}Ho_zMn_xNi_yFe_{24-x-y}O_{41}$ ($z = 0.0, 0.05, 0.10, 0.15, 0.20$, $x = y = 0.0, 0.25, 0.5, 0.75, 1.00$) have been synthesized using sol–gel auto-combustion synthesis route. The effect of Ho–Ni–Mn substitutions on crystallographic and magnetic properties of synthesized nanohexaferrites was investigated using XRD, VSM, and Mössbauer spectroscopy. Microstructural analysis showed single-phase crystal structures without any impurities and hexagonal with the space group *P63/mmc*. The average variation in crystallite size ranges from 43 to 60 nm with a slight increase in X-ray density and appreciable decrease in porosity was observed for different dopants. FE-SEM (Nova Nano SEM-450) substantiates the hexagonal structure and HR-TEM images assisted with SAED pattern confirm the crystalline quality and FWHM of the material, which significantly support the XRD results. FTIR spectra showed two characteristic metal stretching peaks in the range of 400–600 cm^{-1} due to the substitution of Ho–Ni–Mn. Magnetic measurements show maximum magnetic saturation (M_s) at 44.04 emu g^{-1} and elevated value of coercivity (H_c) 224O_e imparting typical characteristics of soft ferrite with high coercivity. Mössbauer analysis with least squares fit sextets of six distinguishable sites at room temperature for all samples substantially supports the results of VSM. The materials with large coercivity are useful in permanent magnet applications. The prepared composites could be useful for applications in microwave absorbing materials, magnetic storage, and the miniaturization of antennas for wireless communication devices.

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Analysis of Cd^{2+} and In^{3+} ions doping on microstructure, optical, magnetic and mössbauer spectral properties of sol-gel synthesized BaM hexagonal ferrite based nanomaterials

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ABSTRACT

Precise studies of cadmium and indium doped barium hexagonal ferrites having chemical composition $Ba_{0.7}Nd_{0.3}Cd_{x/2}In_{x/2}Fe_{12-x}O_{19}$ (x = 0.0, 0.1, 0.2, 0.3) have been performed by sol-gel auto-combustion method in which ethylene glycol was used as a gel precursor. The structural, morphological, optical, elemental and magnetic properties have been studied by using various techniques like XRD, FESEM, FTIR, EDS and VSM. The XRD patterns shows characteristic (110), (008), (107), (114), (108), (203), (205), (206), (1011), (300), (217), (2011), (220), (2014) peaks along with the presence of secondary phase confirming the formation of hexagonal structure with an average crystallite size of 43–59 nm. FESEM supports the formation of hexagonal, dense and agglomerated nanoparticles. The Vibronic study using infrared radiation was carried by FTIR analysis reveal the various configuration modes with hexagonal symmetry of prepared nanoparticles. The magnetic measurements have been studied at room temperature indicates that saturation magnetization (M_s) and magnetic moment (n_B) found to be of range 40–86 emu/g and 7.97–17.23 μ_B. The precise magnetic studies made it possible to reveal that saturation magnetization (M_s) increases with the cadmium and indium concentration for x = 0.1 and after that it decreases for x = 0.2, 0.3 which may be due to the difference in the magnetic moments of Cd, In and Fe ions. Due to high value of saturation magnetization (M_s), it can be used for applications in the field of high density recording storage devices and also, this magnetic change has been explained on the basis of exchange interactions. The room temperature Mössbauer spectra of all the nano-sized materials shows normal Zeeman splitting consisting of six merged line patterns which indicates the formation of ferromagnetic phase that supports the magnetic properties.

Introduction

An iron ore based on iron (III) oxide known as magnetite (Fe_2O_3), called ferrites with combination of divalent cation Me having composition $MeFe_2O_4$. Each synthesized sample has its own advantages and disadvantage on the basis of various parameters related to different properties of prepared samples [1]. The optimum parameters like crystalline size, grain size, configuration modes, resistivity, dielectric constant, dielectric loss, magnetic loss factor, saturation magnetization, coercivity, remanent magnetization, magnetic moment etc. will depend upon the sintering temperature [2], type of dopants and preparation technique [3] for synthesizing samples. The ferrites are classified into two categories on the basis of chemistry of magnetism as hard and soft ferrites. On the basis of their structure, ferrites are classified into four categories as spinel, garnet, ortho and hexagonal. The compounds with hexagonal crystal structure are called hexagonal ferrites or hexaferrites. Hexagonal ferrites gain much attention due to its various applications as many tonnes of magnetic materials are produced by using these hexaferrites world widely [4]. All hexaferrites are ferrimagnetic in nature and due to induced magnetization within the crystal structure; they have preferred orientation, which divide them into two groups: First is known as uniaxial hexaferrites having an easy axis of magnetization and second is known as ferroxplana or hexaplana ferrites having an easy plane or cone of magnetization. The hexagonal ferrites

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Review

A review on structural, electrical and magnetic properties of Y-type hexaferrites synthesized by different techniques for antenna applications and microwave absorbing characteristic materials

Monika Chandel[1], Virender Pratap Singh[1,2,*], Rohit Jasrotia[1,*], Kirti Singha[1] and Rajesh Kumar[1]

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Abstract: In the present review paper, we have explained the structure of Y-type hexagonal ferrite and various synthesis techniques. This paper also includes structural, electrical, magnetic properties and applications of Y-type hexaferrites and focusses on their use in antenna applications and microwave absorbing characteristic materials. Ferromagnetic nature of hexaferrites cause the induction of magnetisation within the crystal structure, which divide them into two groups: First with easy axis of magnetisation is known as uniaxial hexaferrites and second is known as ferroxplana having easy plane of magnetisation. The excellent magnetic properties of Y-type ferrites make them useful in the devices operating at high frequency range. The persistence of high refractive index upto 1 GHz enables these hexagonal ferrites useful in UHF antenna designs with small dimensions.

The doping in Y-type hexaferrites affect all the properties. Current developments in Y-type hexaferrites will be explained in detail in the review of literature related to Y-type hexaferrites for the last 25 years, i.e. from 1994 to 2019 in this review paper.

Keywords: Y-type hexaferrite; structural properties; applications of ferrites; microwave absorbing properties and antenna applications

Abbreviations: μ_r: relative permeability (μ = magnetic permeability); ε_r: relative permittivity; ρ: density, in g·cm^{-3}; B: applied magnetic field (flux density), in SI units of T; dB: decibel, a

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Applied Physics A
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Influence of Ho–Ni–Mn substitution on the structural and magnetic behavior of Ba–Sr Co_2Z-type nanohexaferrites extension up to Mossbauer investigations

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Abstract

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Abstract: In the present review paper, we have explained the structure of Y-type hexagonal ferrite and various synthesis techniques. This paper also includes structural, electrical, magnetic properties and applications of Y-type hexaferrites and focusses on their use in antenna applications and microwave absorbing characteristic materials. Ferromagnetic nature of hexaferrites cause the induction of magnetisation within the crystal structure, which divide them into two groups: First with easy axis of magnetisation is known as uniaxial hexaferrites and second is known as ferroxplana having easy plane of magnetisation. The excellent magnetic properties of Y-type ferrites make them useful in the devices operating at high frequency range. The persistence of high refractive index upto 1 GHz enables these hexagonal ferrites useful in UHF antenna designs with small dimensions.

The doping in Y-type hexaferrites affect all the properties. Current developments in Y-type hexaferrites will be explained in detail in the review of literature related to Y-type hexaferrites for the last 25 years, i.e. from 1994 to 2019 in this review paper.

Keywords: Y-type hexaferrite; structural properties; applications of ferrites; microwave absorbing properties and antenna applications

Abbreviations: μ_r: relative permeability (μ = magnetic permeability); ε_r: relative permittivity; ρ: density, in g·cm^{-3}; B: applied magnetic field (flux density), in SI units of T; dB: decibel, a

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Turbulent Kashmir: Unresolved issue of the Partition

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The 200 year long British rule came to an end on August 15,1947with the Partition of India into two nations, namely Pakistan and India. It was a violent separation of communities who had lived together for generations. This tragic divide claimed thousands of lives, displaced millions and left behind it the legacy of the disputed Kashmir issue, which is still unresolved. Because of this dispute the two countries are spending huge sums of money on arms and this phenomenon has greatly affected the economic development of both the countries. Insurgency and terrorism fuelled by Pakistan to create instability in the region to pressurize India for Kashmir's merger with Pakistan has it roots in the great divide of 1947. In this contest the quest of the paper would be to find out the factors which led to and widened this devastating divide and to explore ways and possible solutions to the Kashmir dispute, for lasting peace in the region and better relations between India and Pakistan.

India and Pakistan have shared a feeling of "mutual distrust" ever since the partition of India. Kashmir has been the bedrock issue between both the nations and has been an unresolved boundary dispute. This distrust was an outcome of the colonial legacy of "*divide and rule*". The colonial policy of divide and rule pitted the Muslims against the Hindus. The policy gave rise, amongst the Muslims, to a sentiment of "Islam being in danger" in the Hindu dominated Indian society. The growth of Islamic nationalism and hence the demand for a separate Muslim state was an outcome of this paranoia.[1]

Since the days of Syed Ahemad Khan , in 1880, a basic theme of the Muslim communities was that if the British left India , the Hindus, because they were a majority, would dominate the Muslims and totally override their interests. Even a cultured and liberal person like Jinnah now catered to the worst feelings of fear and hatred. In his presidential address to the Muslim League in 1938 he said: "The high Command of the Congress is determined, absolutely determined, to crush all other communities and cultures in this country and to establish Hindu Raj".[2] On the other hand Hindu Communalists did not lag behind. V. D. Savarkar, the then President of Hindu Mahasabha, went to the extent of saying that the Muslims want to reduce the Hindus to the position of helots in their own land. [3]

The idea that India and Pakistan are two separate communities divided by religion took birth with the aid of the British midwife. For the perpetuation of British rule it was necessary to reduce the influence of the congress and to create rivals to the Hindu community. The obvious strategy to detract the Hindus was to show favors to the Muslims. There are numerous instances of this policy from the earlier times. In the

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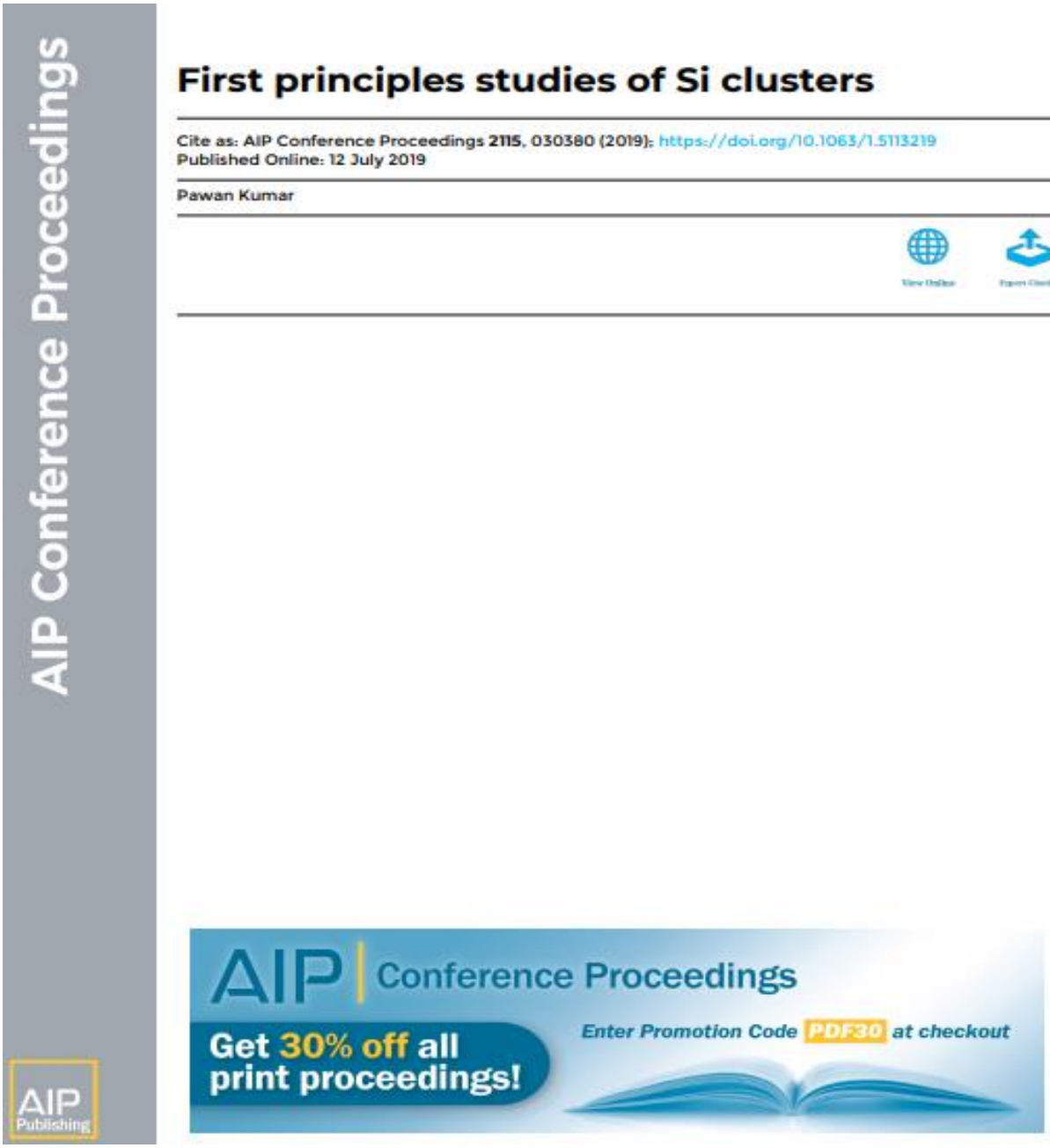

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First Principles Studies of Si Clusters

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Abstract. Clusters are in between atoms and bulk matter. Using Quantum Espresso ab- initio package we found most stable structures for Si_5, Si_7, Si_{10},Si_{13}, $Si_{11}H_{12}$, $Si_{13}H_{14}$ and $Si_{13}H_{16}$ and visualized the resulting structures using XCRYSDEN. We also analyzed these structures using symmetry, density of states, valence band width and band gap values. In case of hydrogenated Si clusters broader valence band and narrower band gap has been found well to correlates with stability.

INTRODUCTION

Clusters are the aggregate of atoms or molecules with a well-defined number of constituents ranging from few to several thousands of atoms. They form the intermediate between atoms (or molecules) and the bulk matter and the study of clusters actually study of the evolution of the physical matter from atoms towards bulk solids.

Study of clusters can help us in the potential use them in the technological applications[1-2].Study of cluster meanshow the clusters are different from atoms and bulk, their behavior changes with size, their geometry and structure. Further, how variations in their size are related to the electronic, magnetic, optical and chemical properties.These studies can lead us to tailor their properties to get desired properties.

The bulk crystalline matter is arranged in a periodic form while clusters are much smaller and are usually just non-periodic aggregates of atoms. Due to these variations in the properties of clusters and bulk matter the entire theoretical framework used to describe the bulk matter is simply not applicable to clusters.

METHODS

The tool which we have used in our study is Quantum-Espresso package.It is a full *ab initio* package implementing electronic structure and energy calculations. Inside this package, PWSCF is the code which is used to perform total energy calculations.We have used generalized gradient approximation (GGA) of density functional theory using QE. Self-consistent calculations are done after supplying atomic positions and atoms are moved to decrease system energy. This is repeated till energy convergence is not achieved.XCRYSDEN has been used to visualize the resulting structures.

RESULT AND DISCUSSIONS

We have studied properties of Si clusters up to n=13. The properties discussed are structure, energy, density of states and energy level diagrams. We have also hydrogenated the resulting cluster of n=13 with hydrogen atoms.

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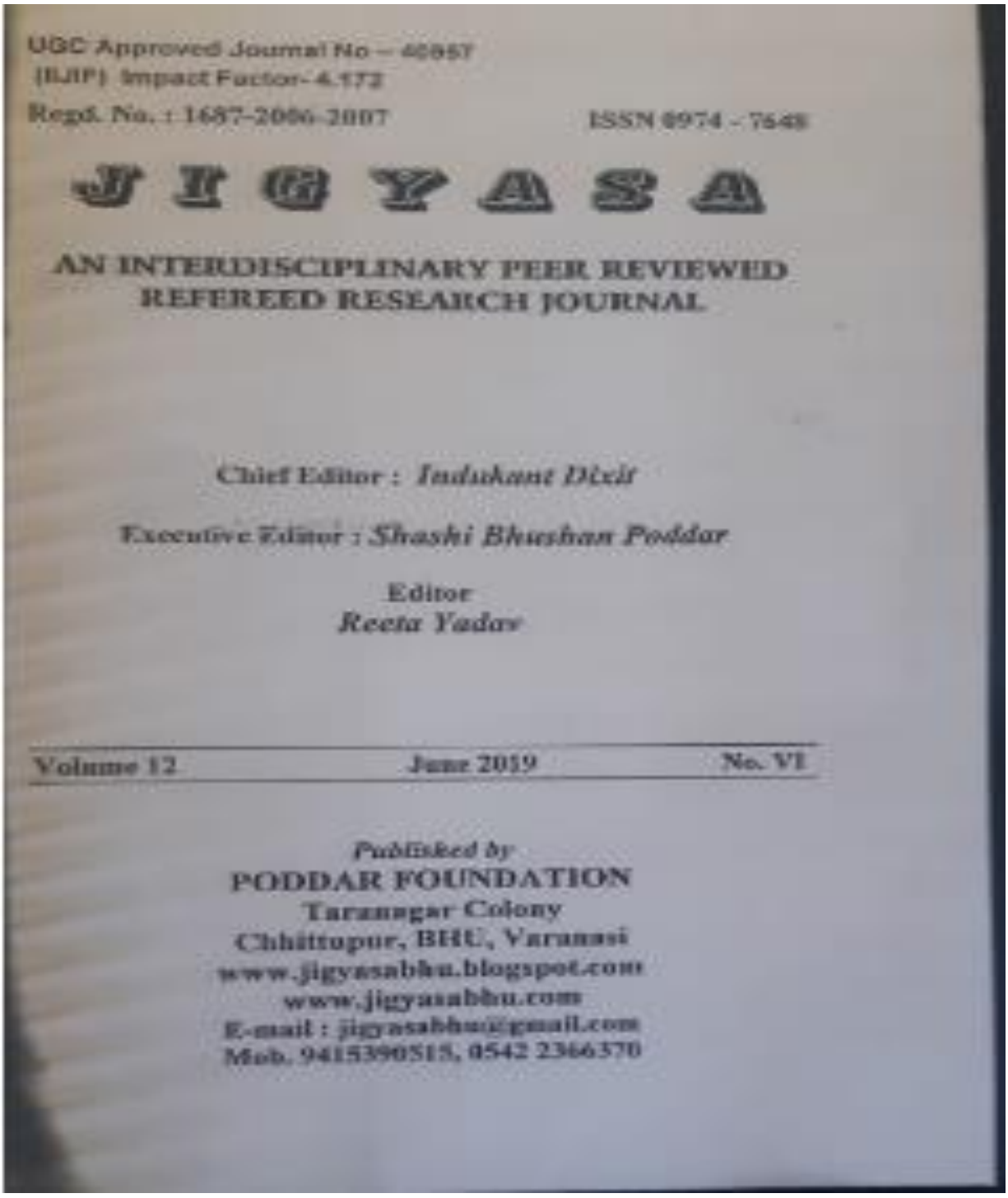

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Away from Rhetoric: Empowering Women in Rural Spaces.

Kanupriya Bisht *

Key words: empowerment, economic transformation, poverty, NGOs, security, aspirational and attitudinal changes

Even though we belong to a country that insists it treats its women right and has a culture of reverence for women, Women's Empowerment as an active social agenda is a relatively fledgling project in India. We may have had a socio-cultural history of worshipping the feminine power and the Goddess, but outside the altar, we mustn't beguile others and delude ourselves with these claims. Equal rights for both the genders has not really been a part of the discourse until the nineteenth century. There were some voices from social reformers calling for emancipation of women during the era that witnessed the struggle for freedom, but these movements did not succeed in convincing the stakeholders of power to share it equally. Their larger interest was to include women, who constitute half the people-force of a nation, to feel empowered in order to participate in the fight for freedom. Post independence, the project of empowering women lost its fire and there was a lull until the seventies, when women's movements around the world had a rub-on effect on the Indian sub continent too and there was a resurgence of the urgency to empower women here as well. This time around, the reform was sought by women for women.

Today, a cursory look at the provisions that the constitution has for the female population, and the number of programmes and initiatives that abound , should make us feel that all is well with the world. But unfortunately there is a gaping divide between the policy and the extent of its implementation on ground. It should now be safe to say that the system, if it is represented by the governments, does have the right intention towards women. But then, the system is more than the government. The policies meet conscious and unconscious resistance at the level of implementation. Let us not blame the present generation of men who are most often the proclaimed offenders in this blame game. It is evident that the male sub-species of the human race has long been the central beneficiary of power in

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Interactions of Drug Doxycycline Hyclate with Galactitol in Aqueous Solutions at Different Temperatures by Volumetric and Acoustic Methods

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Abstract: The experimental values of density, ρ and speed of sound, u of doxycycline hyclate drug (0.002–0.014) mol kg^{-1} in water and (0.1, 0.2 and 0.4) mol kg^{-1} of aqueous galactitol solutions at temperatures T = (303.15, 308.15 and 313.15) K and at atmospheric pressure have been reported in the present communication. From the experimental values, various derived parameters such as apparent molar volume (Φ_V), apparent molar isentropic compression (Φ_K), limiting apparent molar volume (Φ_v^o), limiting apparent molar isentropic compression (Φ_K^o), limiting apparent molar volume of transfer ($\Delta\Phi_V^O$), limiting apparent molar isentropic compression of transfer ($\Delta\Phi_K^O$), limiting apparent molar expansibility (Φ_E^o), thermal expansion coefficient (α) and acoustic parameters like isentropic compressibility (κ_S), intermolecular free length (L_f), and specific acoustic impedance (Z) were calculated. The structure-making behaviour of DH in aqueous galactitol solution was determined on the basis of Hepler's Equation i.e. on the basis of sign of $\left(\frac{d^2\Phi_V^O}{dT^2}\right)_P$. The various derived parameters were utilised to interpret the molecular interactions i.e. solute–solute and solute–solvent existing in the studied system.

Keywords: apparent molar properties; doxycycline hyclate; galactitol; molecular interactions.

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Thermophysical properties of glycine and glycylglycine in aqueous tartaric acid at different temperatures: Volumetric, acoustic and viscometric studies

Shashi Kant Sharma, Abhishek Thakur, Dinesh Kumar, Vikas Nathan

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Highlights

- Molecular interactions between glycine and glycylglycine in water and in aqueous tartaric acid solutions are studied.
- The Volumetric, Compressibility, Acoustic and Viscometric methods are used to interpret results.
- Solute-Solvent interactions predominate over solute-solute interactions.
- Glycine and glycylglycine behaves as a structure breaker in water and in aqueous tartaric acid solutions.

Abstract

Thermophysical properties like density, ultrasonic velocity and viscosity of glycine, glycylglycine in water and in (0.1942, 0.3773, 0.5504 and 0.7142) mol · kg^{-1} aqueous tartaric acid solutions as a function of concentration at different temperatures ranging between (298.15 and 318.15) K have been determined. These data have been utilized to calculate apparent molar volume (φ_v), apparent molar isentropic compressibility (φ_k), and viscosity B-coefficient values of the studied solutions. The partial molar volumes ($\varphi_v{}^0$), partial molar isentropic compressibility ($\varphi_k{}^0$) and experimental slopes ($S_v{}^*$ and $S_k{}^*$) derived from the Mason equations have been interpreted in terms of solute-solute and solute -solvent interactions. The viscosity coefficients A and B have been determined from the Jones-Dole equation. From the volumetric and viscometric data, hydration number (n_H) has been calculated and further, the structural effects of glycine, glycylglycine in tartaric acid solution has been discussed. The results were explained in terms of structure making and structure breaking properties.

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Structural, magnetic and Mössbauer analysis of lanthanum and nickel doped Co_2Y-type hexaferrite nanomaterial matrix synthesized by sol-gel auto-combustion technique

Monika Chandel [a], Virender Pratap Singh [a, b, **], Kirti Singha [a], Susheel Kalia [c, *], Rajesh Kumar [a], Gagan Kumar [d], M. Singh [e]

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ABSTRACT

Sol-gel auto-combustion technique was used to prepare the lanthanum (La^{3+}) and nickel (Ni^{2+}) doped Co_2Y-type $Sr_{2-y}La_yCo_2Ni_xFe_{12-x}O_{22}$; x – 0.0, 0.1, 0.2, 0.3; y – 0.0, 0.01, 0.02, 0.03 nanohexaferrites materials. Synthesized nanohexaferrites were characterized by XRD, FTIR and EDS analysis. The collective XRD analysis reveals the single-phase patterns corresponding to various dopants concentration in the powder system matrix. The calculated structural - auxiliary parameters viz. Lattice constants (a and c), cell volume (V_{cell}), X-ray density (d_x), bulk density (d_b) and porosity (P) have been found in range; a – 5.8798–5.8321 Å, c – 43.7316–44.7214 Å, V_{cell} – 1309.303–1317.304 Å^3, d_x – 5.014–4.987 gm/cm^3, d_b – 3.774–3.128 gm/cm^3 and P – 0.247–0.37. The XRD results were supported by FESEM and TEM images, which showed the plate-like shape of particles. Unlike irregular grains, regular platelet-like grains were composed of several crystallites with almost parallel c-axis and this is the most suitable shape for microwave absorption. Fourier-transform infrared spectroscopy (FTIR) showed the location of the ions including their respective bonds within the structure of the lattice matrix and variation of ion concentration was depicted by EDS analysis of the powder matrix. The investigation of magnetic properties was done by vibrating sample magnetometer (VSM). The saturation magnetization (M_s) and coercivity (H_c) were found to be in the range of 34.29–43.711 emu/g and 16.27–299.441 Oe, respectively. The improved values of Ms and Hc mean that these powders can be used as pre-eminent contestant materials for perpendicular recording media (PMR) applications. In addition, the synthesized Co_2Y-type nanohexaferrites were characterized for the Mössbauer analysis at room temperature. The normal Zeeman (six-line patterns) splitting confirms the hexagonal phase of synthesized nanohexaferrites.

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1. Introduction

Ferrites of magneto plumbite crystal structure have a wide scope of utilization in the field of materials science [1]. Especially, strontium hexaferrites were extensively considered due to their unique electromagnetic properties, good thermal durability, corrosion resistivity, perfect chemical stability. Strontium hexaferrites have broad high-frequency applications in various electromagnetic gadgets from microwave to radio frequencies due to their high electrical resistivity, also applicable in transformer core including high-quality filters [2,3]. Due to the integration of more components in smaller space, the compatibility of electromagnetic interference (EMI), as well as anti-electromagnetic interference, become one of the most thought-provoking challenges in the high-frequency microelectronic products. Co_2Y-type hexagonal ferrites

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Fabrication of Ni^{2+} and Dy^{3+} substituted Y-Type nanohexaferrites: A study of structural and magnetic properties

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ABSTRACT

A series of the Y-type hexaferrites having chemical composition $Sr_{2-x}Dy_xCo_2Ni_yFe_{12-y}O_{22}$ (x = 0.0, 0.01, 0.02, 0.03, 0.04 and y = 0.0, 0.1, 0.2, 0.3, 0.4) were fabricated with doping of Dy^{3+} and Ni^{2+}. XRD patterns confirm the formation of a single-phase hexagonal structure along with some impurity phases. FESEM and TEM analysis shows the formation of agglomerated magnetic nanoparticles. M − H loops obtained from VSM observations were used to study the magnetic parameters viz. saturation magnetization (M_s = 34.28–43.30 emu/g), remanence (M_r = 1.08–11.60 emu/g) and coercivity (H_c = 33.98–246.05 O_e), which were found to increase with an increase in Dy^{3+}/Ni^{2+} substituents. The synthesized materials with excellent structural and magnetic properties are promising candidates for high-frequency applications.

1. Introduction

The nanocrystalline hexagonal ferrites have gained a lot of scientific attention and researchers are working on Y-type hexagonal ferrites due to their high chemical stability, unique magnetic properties and low cost [1–4]. Today, the world is demanding technology with high performance electronic and telecommunication devices. This demand can be fulfilled with the help of Y- type hexaferrites because these materials can operate at high frequency. A high frequency, high permeability, and planar magnetocrystalline anisotropy enhance the practical applicability of such magnetic materials.

The Y-type hexaferrites have hexagonal crystal structure with ferromagnetic nature and the space group is *R3m*; the molecular unit consists of two and four-layered blocks termed as S and T blocks respectively [5]. The technology demands the materials with high numbers of functionalities and a high-frequency range for useful applications [6]. These hexaferrites have general formula $A_2Me_2Fe_{12}O_{22}$, where A and Me refers to divalent metal ions distributed among six (two tetrahedral and four octahedral) sublattices [7]. Y-type hexagonal ferrites have wide applications in high frequency operating devices and high-quality filters due to their high chemical stability and unique magnetic properties. Also, a high value of coercivity makes them more suitable in microwave devices.

Many techniques like sol-gel, hydrothermal, co-precipitation and glass crystallization are developed to fabricate Y-type hexaferrite [8]. In this paper, the sol-gel method was used for the preparation of nanohexaferrites because this technique can easily control the size, shape and distribution of the particles at low annealing temperatures [9]. Moreover, the co-doping of transition and rare earth metals in Y-type hexaferrites is rarely reported to study the influence on the structural and magnetic properties of hexaferrites. Rare earth materials are known to possess good electrical insulation with high electrical resistivity. Nickel is a corrosion-resistant transition metal and ferromagnetic at room temperature. So, this work aims to study the effect of Dy^{3+} and Ni^{2+} substitutions on structural and magnetic properties of synthesized nanohexaferrites. Strontium based Y-type hexaferrites were substituted with Dy^{3+} ions at Sr^{2+} and Ni^{2+} ions at Fe^{3+} ions and magnetic properties were expected to be enhanced.

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Structural, magnetic and Mössbauer analysis of lanthanum and nickel doped Co_2Y-type hexaferrite nanomaterial matrix synthesized by sol-gel auto-combustion technique

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1. Introduction

Ferrites of magneto plumbite crystal structure have a wide scope of utilization in the field of materials science [1]. Especially, strontium hexaferrites were extensively considered due to their unique electromagnetic properties, good thermal durability, corrosion resistivity, perfect chemical stability. Strontium hexaferrites have broad high-frequency applications in various electromagnetic gadgets from microwave to radio frequencies due to their high electrical resistivity, also applicable in transformer core including high-quality filters [2,3]. Due to the integration of more components in smaller space, the compatibility of electromagnetic interference (EMI), as well as anti-electromagnetic interference, become one of the most thought-provoking challenges in the high-frequency microelectronic products. Co_2Y-type hexagonal ferrites

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Fabrication of Ni^{2+} and Dy^{3+} substituted Y-Type nanohexaferrites: A study of structural and magnetic properties

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ABSTRACT

A series of the Y-type hexaferrites having chemical composition $Sr_{2-x}Dy_xCo_2Ni_yFe_{12-y}O_{22}$ (x = 0.0, 0.01, 0.02, 0.03, 0.04 and y = 0.0, 0.1, 0.2, 0.3, 0.4) were fabricated with doping of Dy^{3+} and Ni^{2+}. XRD patterns confirm the formation of a single-phase hexagonal structure along with some impurity phases. FESEM and TEM analysis shows the formation of agglomerated magnetic nanoparticles. M − H loops obtained from VSM observations were used to study the magnetic parameters viz. saturation magnetization (M_s = 34.28–43.30 emu/g), remanence (M_r = 1.08–11.60 emu/g) and coercivity (H_c = 33.98–246.05 O_e), which were found to increase with an increase in Dy^{3+}/Ni^{2+} substituents. The synthesized materials with excellent structural and magnetic properties are promising candidates for high-frequency applications.

1. Introduction

The nanocrystalline hexagonal ferrites have gained a lot of scientific attention and researchers are working on Y-type hexagonal ferrites due to their high chemical stability, unique magnetic properties and low cost [1–4]. Today, the world is demanding technology with high performance electronic and telecommunication devices. This demand can be fulfilled with the help of Y- type hexaferrites because these materials can operate at high frequency. A high frequency, high permeability, and planar magnetocrystalline anisotropy enhance the practical applicability of such magnetic materials.

The Y-type hexaferrites have hexagonal crystal structure with ferromagnetic nature and the space group is *R3m*; the molecular unit consists of two and four-layered blocks termed as S and T blocks respectively [5]. The technology demands the materials with high numbers of functionalities and a high-frequency range for useful applications [6]. These hexaferrites have general formula $A_2Me_2Fe_{12}O_{22}$, where A and Me refers to divalent metal ions distributed among six (two tetrahedral and four octahedral) sublattices [7]. Y-type hexagonal ferrites have wide applications in high frequency operating devices and high-quality filters due to their high chemical stability and unique magnetic properties. Also, a high value of coercivity makes them more suitable in microwave devices.

Many techniques like sol-gel, hydrothermal, co-precipitation and glass crystallization are developed to fabricate Y-type hexaferrite [8]. In this paper, the sol-gel method was used for the preparation of nanohexaferrites because this technique can easily control the size, shape and distribution of the particles at low annealing temperatures [9]. Moreover, the co-doping of transition and rare earth metals in Y-type hexaferrites is rarely reported to study the influence on the structural and magnetic properties of hexaferrites. Rare earth materials are known to possess good electrical insulation with high electrical resistivity. Nickel is a corrosion-resistant transition metal and ferromagnetic at room temperature. So, this work aims to study the effect of Dy^{3+} and Ni^{2+} substitutions on structural and magnetic properties of synthesized nanohexaferrites. Strontium based Y-type hexaferrites were substituted with Dy^{3+} ions at Sr^{2+} and Ni^{2+} ions at Fe^{3+} ions and magnetic properties were expected to be enhanced.

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Journal of Sol-Gel Science and Technology
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ORIGINAL PAPER: SOL–GEL AND HYBRID MATERIALS FOR DIELECTRIC, ELECTRONIC, MAGNETIC AND FERROELECTRIC APPLICATIONS

A study of magnetic properties of Y–Ni–Mn substituted Co_2Z-type nanohexaferrites via vibrating sample magnetometry

Kirti Singha[1] · Rohit Jasrotia[1] · Virender Pratap Singh[1,2] · Monika Chandel[1] · Rajesh Kumar[1] · Susheel Kalia[3]

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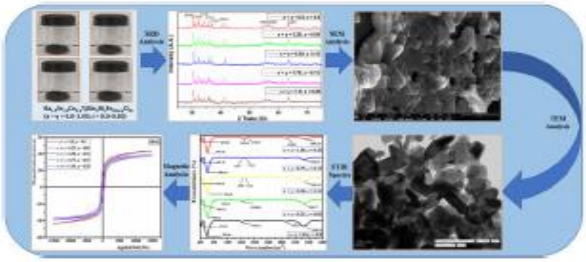
Abstract

Z-type nanohexaferrites has attracted substantial attention in the field of materials science especially in the research areas of high frequency and microwave devices applications due to their excellent magnetic properties in comparison with the spinel ferrites. A series of $Ba_{1.5}Sr_{1.5}Co_{2-x}Y_xMn_yNi_zFe_{24-y-z}O_{41}$ ($x = 0.0, 0.05, 0.10, 0.15, 0.20$; $y = z = 0.0, 0.25, 0.50, 0.75, 1.00$) Z-type hexaferrites were fabricated with the help of sol–gel auto-combustion method in order to achieve its better microstructural and magnetic properties. The crystallographic structure of prepared specimens was characterized by XRD which revealed the presence of Z-type single-phase hexagonal structure with some additional phases accompanied by $P6_3/mmc$ space group. The average particle size calculated by Scherrer formula was found to be in the range of 40–55 nm. The FTIR spectrum of synthesized specimens was observed in the range of 400–600 cm^{-1} which confirms our microstructural results to a great extent. From the M–H hysteresis loops, magnetic parameters such as saturation magnetization (M_s) (44.04–35.59 emu/g) and coercivity (H_c) (42.3–248.96 Oe) were measured and it was observed that the synthesized specimens exhibit excellent characteristics of soft ferrite which make it suitable for the multilayer chip inductors, electromagnets, and magnetic storage devices applications.

Graphical Abstract



Keywords Z-type nanohexaferrites · Sol–gel preparation · Structural study · Morphological Investigation · Magnetic measurements

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ORIGINAL PAPER: SOL–GEL AND HYBRID MATERIALS FOR DIELECTRIC, ELECTRONIC, MAGNETIC AND FERROELECTRIC APPLICATIONS

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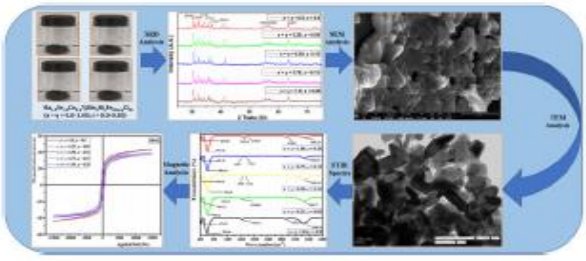

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A NOTE ON VARIANCE BOUNDS AND LOCATION OF EIGENVALUES

R. SHARMA, A. SHARMA AND R. SAINI

(*Communicated by M. Krnić*)

Abstract. We discuss some extensions and refinements of the variance bounds for both real and complex numbers. The related bounds for the eigenvalues and spread of a matrix are also derived here.

1. Introduction

Let $z_1, z_2, \ldots, z_n$ denote n complex numbers. Their arithmetic mean is the number

$$\frac{1}{n}\sum_{i=1}^{n} z_i = \widetilde{z}. \tag{1.1}$$

In literature, the number

$$\frac{1}{n}\sum_{i=1}^{n} |z_i - \widetilde{z}|^2 = S_z^2 \tag{1.2}$$

or its equivalent expressions have been studied in several different contexts and notations and is termed as the variance of complex numbers at many places. For example, see Audenaert [2], Bhatia and Sharma [4,5], Merikoski and Kumar [13], and Park [17].

The number

$$\frac{1}{n}\sum_{i=1}^{n} (z_i - \widetilde{z})^2 = S^2 \tag{1.3}$$

is also important in this context. If z_i's are all real we denote them by x_i's with $a = \min x_i$ and $b = \max x_i$. The arithmetic mean by $\overline{x}$ and variance by the lower case letter s^2. In this case $S_z = |S| = S = s$ but in general S_z rather than $|S|$ is more consistent with s. For instance, $s = 0$ $(S_z = 0)$ if and only if all the x_i's $(z_i$'s) are equal. This is not the case with $|S|$; for example, for three distinct complex numbers $0, \pm\frac{1}{2} + i\frac{\sqrt{3}}{2}$ we have $S = 0$. It however turns out that for some purposes s^2 is more consistent with

$$\sigma_z^2 = \frac{|S^2| + S_z^2}{2} \tag{1.4}$$

Mathematics subject classification (2010): 15A42, 26C10, 60E15.
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Dr. Rajesh Kumar Dhorta

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INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

ROLE OF AGRICULTURE SECTOR IN THE ECONOMIC DEVELOPMENT OF HIMACHAL PRADESH

[1,]Rajesh Kumar Dhorta, [2]Dr. Ajay Kumar and [3]Dr. Devinder Sharma

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Cultivable Cropping Area,
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ABSTRACT

Agriculture sector in India is of such relevance that it is contributing employment to more than 50 percent of the work force and 17 to 18 percent of the Nation's Gross Domestic Product. It is pertinent to understand that the land available for cultivation is abundant and in a country like India where large majority of the population belongs to middle and low economic class and youth is in search of job avenues, if youth is skillfully involved to initiate and go for adopting innovative agricultural activities, employability can be enhanced. At present, land available for cultivation out of the total land holdings in Himachal Pradesh is 75.3 percent of the total area and 87.9 percent of total area in India. Further, Net Area sown is 11.9 percent of the total cultivable area in the State as compared to 45.8 percent that of the Country. Agriculture sector is contributing nearly 16 percent to the Gross State Domestic Product of Himachal Pradesh. Based upon the criteria of land holding, households, cultivable cropping area, net sown area and irrigation, the research paper endeavors to examine the role of agriculture sector in the economic development of Himachal Pradesh.

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INTRODUCTION

India has diversity of habitation and land use characteristics. The Country is spread over the total land area of 329 million hectares out of which, gross cropped area is 141 million hectare. The agriculture of the Country is of such relevance that it is contributing employment to more than 50 percent of the work force and 17 to 18 percent of the Nation's Gross Domestic Product. It is pertinent to understand that the land available for cultivation is abundant and in a country like India where large majority of the population belongs to middle and low economic class and youth is in search of job avenues, if youth is skillfully involved to initiate and go for adopting innovative agricultural activities, employability can be enhanced. At present, land available for cultivation out of the total land holdings in Himachal Pradesh is 75.3 percent of the total area and 87.9 percent of total area in India. Further, Net Area sown is 11.9 percent of the total cultivable area in the State as compared to 45.8 percent that of the Country. It is further pertinent to mention that this sector has good chances of yield and earning as it is being facilitated by resources.

In Himachal Pradesh, 20 percent of the net cropped area is equipped with the irrigation facilities and in India, 45 percent of the net cropped area is having irrigation facility. Having such a relevant sector of the national economy, agriculture sector needs to be practiced in terms of encouraging the usage of technology. The research paper endeavors to examine the role of agriculture sector in economic development of Himachal Pradesh.

REVIEW OF LITERATURE

Chaudhary (2016) has claimed that majority of marginal and small farmers' practice in traditional farming in the state of Himachal is not remunerative. He feels that a manifold increase in the resource-use efficiency in crop production can be obtained through protected cultivation compared to open-field conditions which can help marginal and small farmers by provided them financial and extension services for infrastructural development and transfer of technology speeded up to bring the desired technology to the region.

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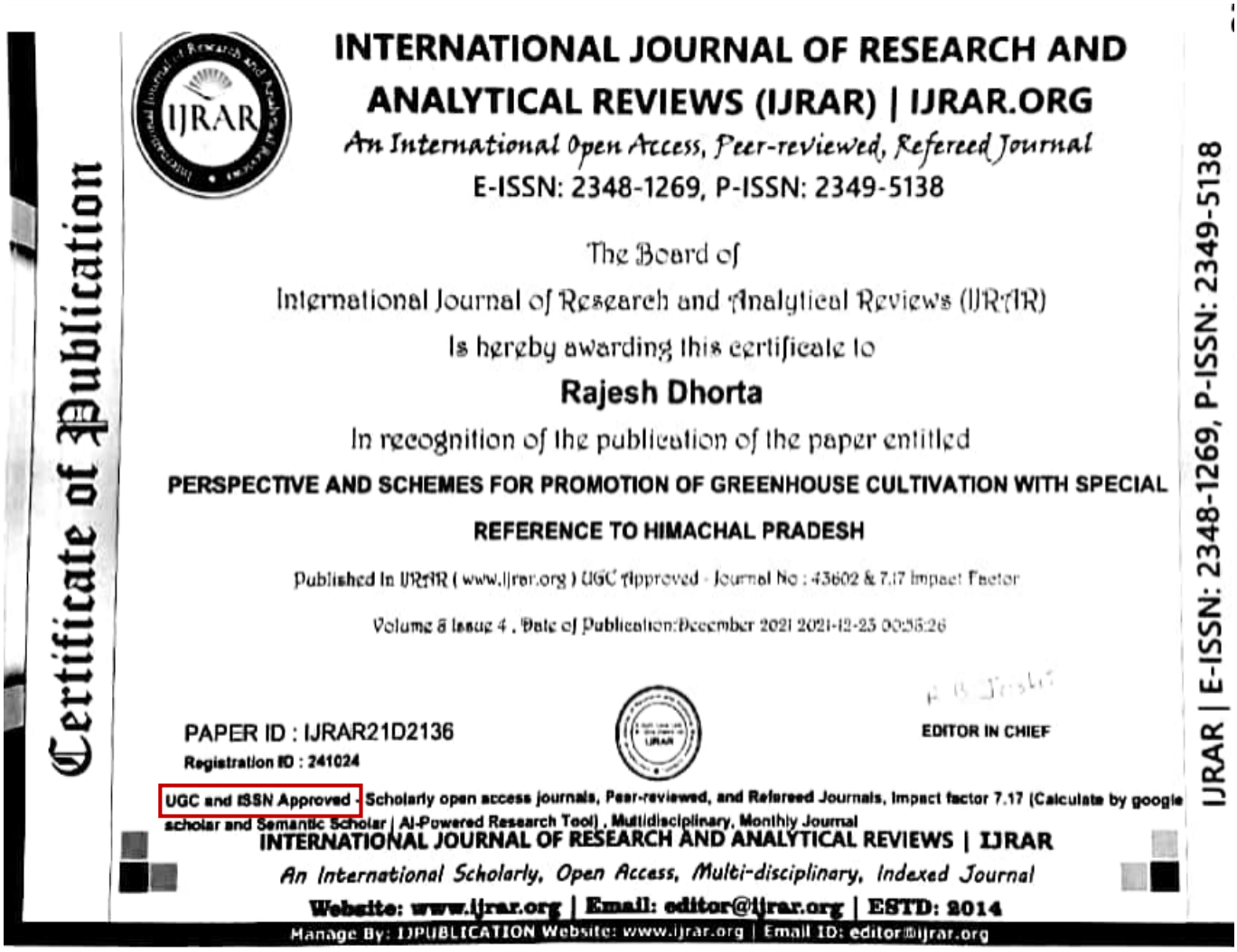

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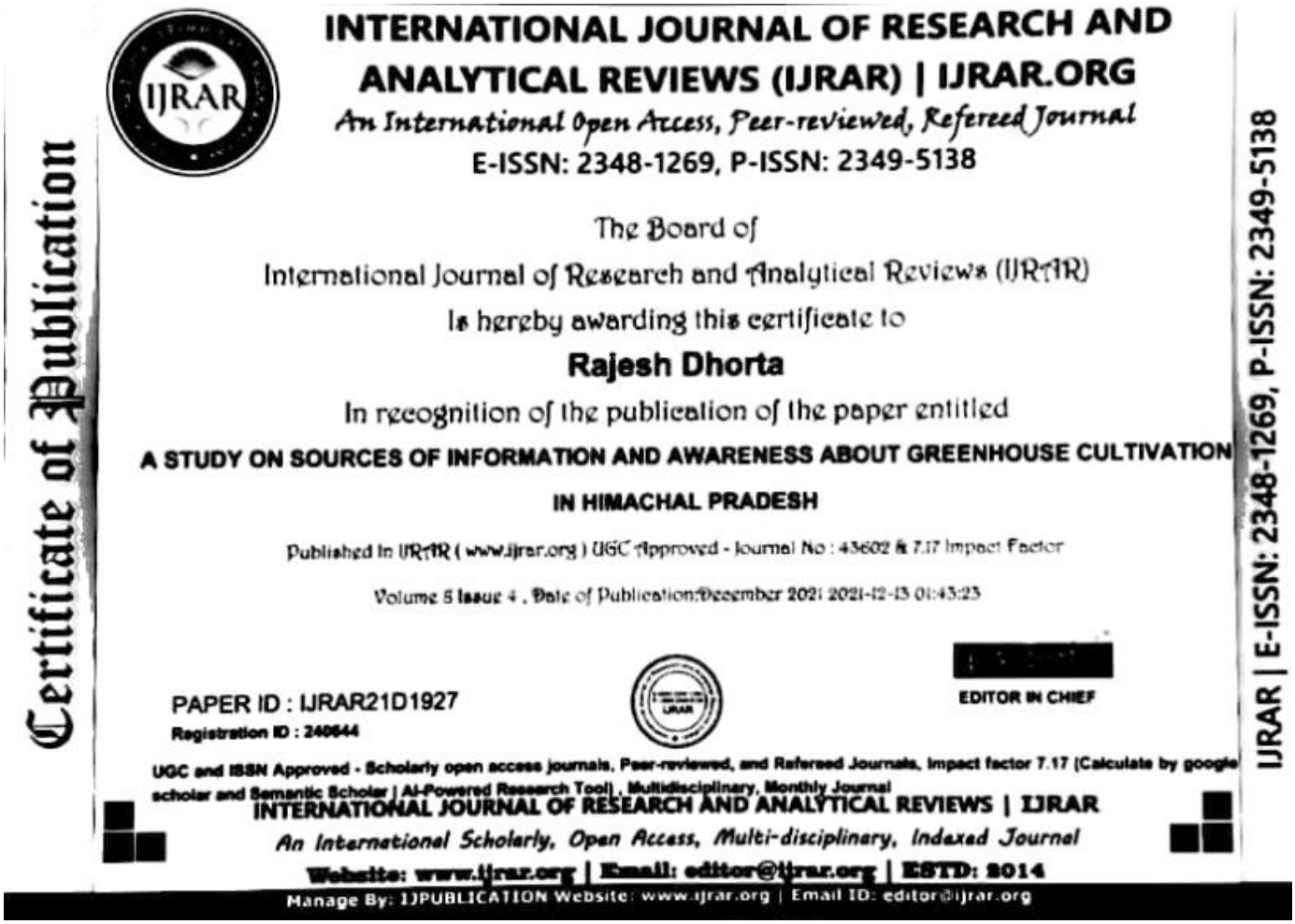

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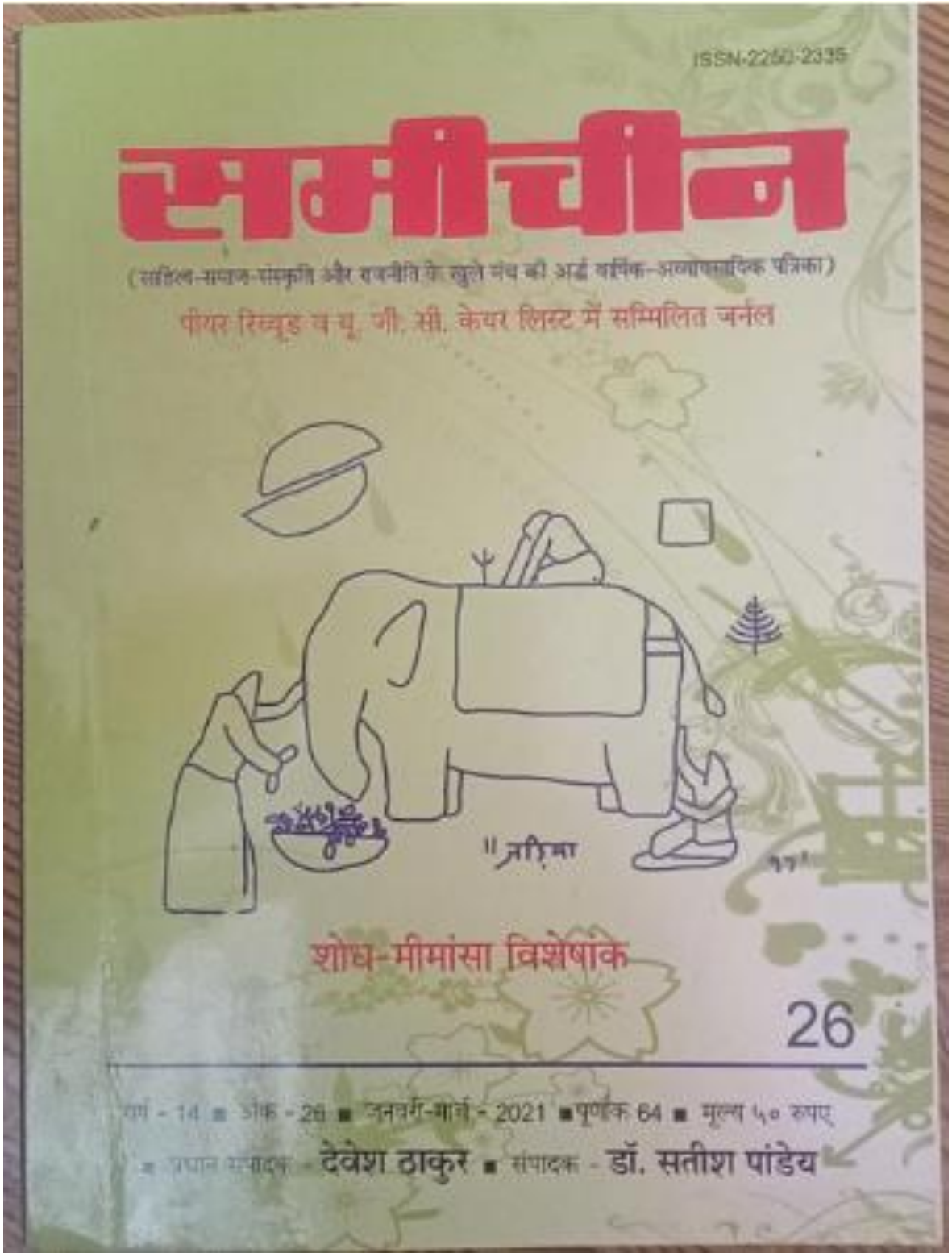

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समकालीन कविता में ग्रामीण संवेदना और लोककल्याण के कवि कुमार कृष्ण

– डा. सत्यनारायण स्नेही

जिस दुनिया में
लिखी जाएगी बेहतर कविताएँ
वही होगी बेहतर दुनिया शब्द और अर्थ नहीं है कविता
सबसे सुन्दर सपना है सबसे अच्छे आदमी का

समकालीन हिन्दी कविता में विश्वनाथ प्रसाद तिवारी की कविता का यह कवितांश जिस बेहतर दुनिया की बात करता है। इसी परम्परा के अगले कवि हैं कुमार कृष्ण, जो वैश्विक परिवर्तन और तकनीकी युग के इस दौर में ग्रामीण जीवन की वास्तविकताओं को सहज रूप में व्यक्त करते हुए मानवीय मूल्यों एवं संवेदनाओं की अहमियत बताते हैं और आज के समय में अपनी संस्कृति, सभ्यता, भाषा, एवं अस्मिता बचाने की बात करता है–

मनुष्य के पास होनी चाहिए / बच्चों की शरारतें
बुर्जुगों की यादों का बटुआ / प्यार और नफरत के
रंग-बिरंगे छाते / उसके पास होने चाहिए / बेशुमार दरवाजे
जो खुल जाएँ सिर्फ एक बार खटखटाने पर।[1]

कवि कुमार कृष्ण की कविताओं में भारतीय किसान की चिन्ता, व्यथा और पीड़ा विद्यमान है। इन्होंने पहाड़ी अंचल के पात्रों, समस्याओं, सम्बन्धों, प्राकृतिक एवं सामाजिक परिवेश के समग्र रूपों, परम्पराओं अर्थात अंचल के समग्र जीवन को अपनी कविता में सरल एवं स्वाभाविक रूप से व्यक्त किया है इनकी कविताओं में भारतीय गाँव, भारतीय समाज तथा परिवार, भारतीय संस्कृति तथा परम्पराएँ, मानवीय रिश्तों के अहसास को देखा जा सकता है। इनमें लोक चेतना तथा ग्रामीण संवेदना का पारदर्शी समन्वय देखने को मिलता है। इनकी कविताओं में पहाड़ी गाँव का दर्द है जो हर गाँव की पीड़ा ब्यान करता है। कवि कुमार कृष्ण की कविताओं का मूल स्वर है–

मैं लिखना चाहता हूँ / खेतों के ताप / मिटटी की बौखलाहट
बीज की बेचैनी / जमीन का उन्माद / सभी कुछ एक साथ
फोड़ना चाहता हूँ पहाड़ / कविता के शब्दों से[2]

कुमार कृष्ण की कविताओं में पहाड़ का गाँव है, यहाँ के किसानों के सुख-दुख हैं और यह एहसास भी है कि आज के परिवर्तनशील और शहर की ओर बढ़ते हुए वर्गगत जीवन में उसकी क्या स्थिति है ? वास्तव में, कृषक जीवन की दास्तान ही ऐसी है कि वह जन्म से मृत्यु पर्यन्त संघर्षमय रहते हुए अभावग्रस्त जीवन-बसर करता है। लोक जीवन में सामान्य व्यक्ति की

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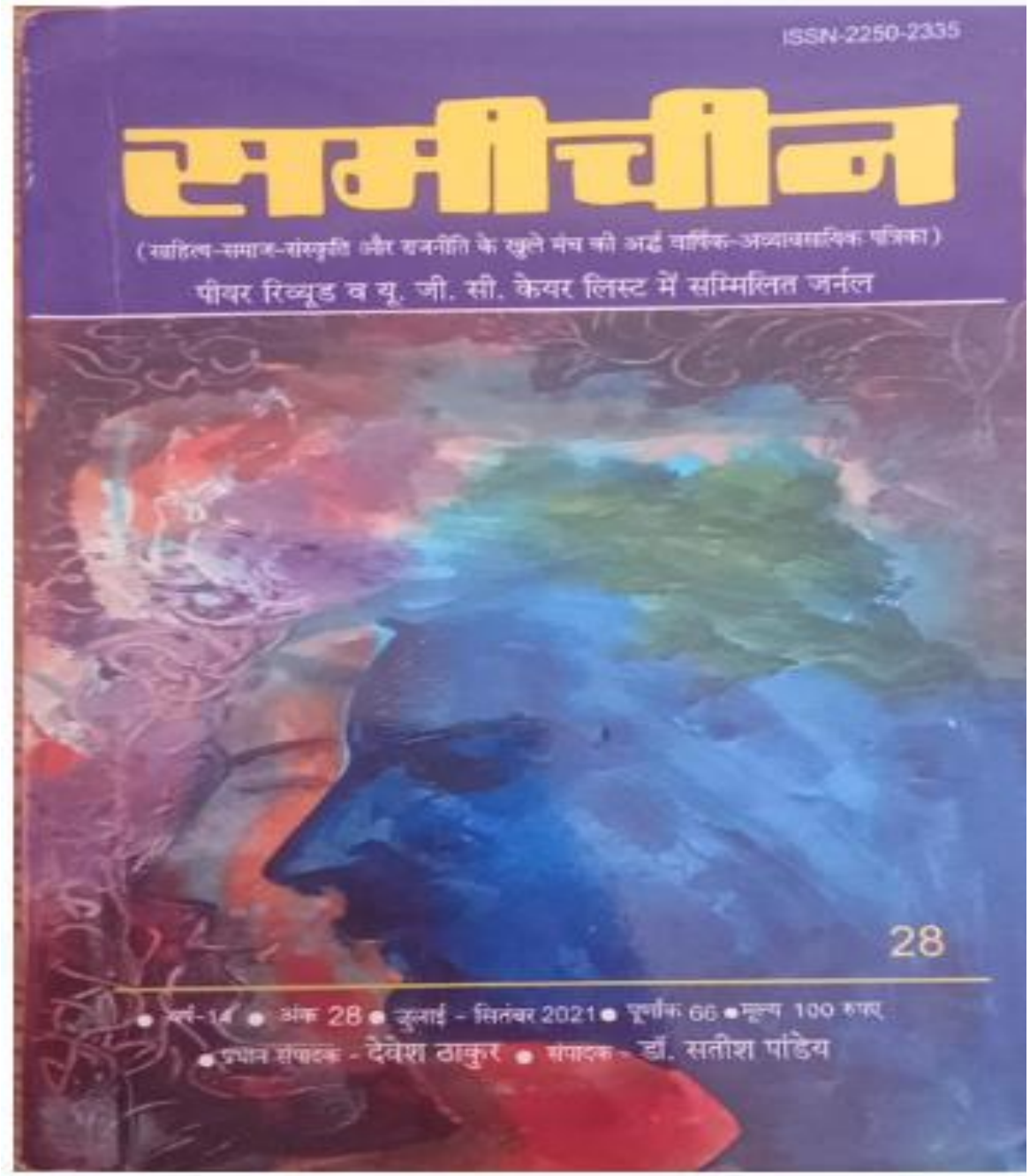

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समकालीन व्यवस्था की पड़ताल और आम जन से संवाद करती कविताएं

डा. सत्यनारायण स्नेही

मैंने चाहा था कि मेरी कविताएं/लोकगीतों की पंक्तियों में खो जाएँ/
जिन्हें नदियों में मछुआरे /खेतों में किसान/ मिलों में मजदूर / झूमते गाएं /
किंतु मेरी कविताओं की अजीब सी धुन है / खुले विस्तार से बंद कमरों की ओर जाती है/
उजली धूप में रह कर / अंधेरे के बिंब बनाती है। (यह सब कैसे होता है)

साठोत्तरी हिन्दी कविता में कवि कुमार विकल की कविता का ये अंश कविता के प्रति उनके दृष्टिकोण का संकेत है। जहां काव्यात्मक संसार में उसे अपनी सार्थकता में नन्हें बच्चों, उनकी मांओं, लोकगीतों में बदलते हुए मछुआरों, किसानों, मजदूरों आदि तक जाना है। वो बंद कमरे में रहे, तो भी धूप में अंधेरे के बिंब बनाए, इस विडंबना का निर्वहन भी कविता में ही करते हैं। सही मायनों में कवि कुमार विकल का बंद कमरा आम आदमी की यातनाओं, संतापों, संकटों और विवशताओं का कमरा है, जहां कवि अपनी रचनाशीलता को समकालीन समाज के साथ जोड़ते हुए उसमें अंतर्निहित अंतर्द्वंद्वों की पड़ताल करता है। कविता में शिल्प और भाव के स्तर पर धूमिल ने जिस जमीन का निर्माण किया, परवर्ती कवियों में कुमार विकल ने उसका विकास करते हुए निर्मम व्यवस्था, सामाजिक, राजनीतिक अव्यवस्था और विसंगतियों के विरुद्ध अभिव्यक्ति दी है साथ ही कविता में लोकचेतना और लोकवेदना की जीवन्त ऊर्जा से मनुष्य में उम्मीद और उत्साह भरते हैं। कवि पाठकों से कविता में सीधा संवाद करता है और लोकमानस के धरातल पर अपनी कविताओं की बुनियाद खड़ी करता है। इन्होंने चरखा कात रही बुढ़िया के बारे में सोचकर बायोस्कोप देखा, जोकि घर के इंधन और दफ्तर की फाईल के बीच गायब हो गया, इनको देखने में चम्बा की धूप पहाड़ी गाय लगती है, सरकारी इमारतों में जंगल उग रहे हैं, यहां चीजों की बढ़ती कीमतें परेशान करती हैं तथा सड़क पर हजारों लाख उदास चेहरे भटक रहे हैं, रोजगार, रोटी और बच्चों की चाकलेट के लिए गोदो की प्रतीक्षा है, दुखी दिनों में दिन की रोशनी में अंधेरा ढूंढता आदमी है, राजपथ की तिलिस्मी दुनिया में अकेला असुरक्षित तन्त्र के खिलाफ निहत्थी लड़ाई लड़ रहा है और रक्त-सने कपड़ों, फटे जूतों, टूटी साइकिलों और खिलौनों में कौम की शिनाख्त कर रहा है उसकी रोटी की गंध टिफिन में बंद है और सपनों की

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सुदामा पाण्डेय धूमिल के काव्य में समकालीन यथार्थ

डॉ० सत्यनारायण स्नेही*

शोध सारांश

साठोत्तरी हिन्दी कविता में सुदामा पाण्डेय धूमिल का अभ्युदय समकालीन जीवन में व्यापत विसंगतियों एवं विद्रूपताओं का ईमानदारी एवं उत्तरदायी अभिव्यक्ति के साथ हुआ हैं। धूमिल का समूचा काव्य समकालीन परिवेश का प्रतिबिम्ब है, जहां एक ओर अभावग्रस्त जिंदगी के मर्मस्पर्शी चित्र हैं, वहीं दूसरी ओर समाज की स्थिति, गतिहीनता, जर्जरता, विकृतियों और विडम्बनाओं को बखूबी समझा जा सकता है। इसमें आम आदमी की पीडा को उसकी परिवेशगत सच्चाई के साथ सार्थक अभिव्यक्ति मिली है। उनकी कविता न आत्मपीड़न अथवा आत्मरोदन है, न ही सैद्धांतिक ढांचे में बुना हुआ क्रांति-दर्शन, हालात को सही परिप्रेक्ष्य में देखने तथा उसका तदनुरूप साक्षात्कार कराने की एक सक्रिय अतर्दृष्टि है। धूमिल की कविता समकालीन जीवन के परिप्रेक्ष्य में आकी गई रचनात्मक तस्वीर है। जिसमें सवेदना को हालात की गहरी समझ के साथ ढाला गया है। इनके लिए जहा कविता भाषा में आदमी होने की तमीज है, वहीं कविता शब्दों की अदालत में/मुजरिम के कटघरें मे खड़े बेकसूर आदमी का हलफनामा है। अत कविता को अपने युग और समय का साक्षात्कार करने के लिए आदमियत का स्रोत निरंतर प्रवाहित होना चाहिए। इसी से कविता में लोकचेतना और लोकवेदना की समाज सापेक्ष तथा समय सापेक्ष अभिव्यक्ति होती है। धूमिल की कविता में अपने युग की सवेदना निश्चित रूप से मुखर हुई है. जिसमें ग्रामीण जीवन का संघर्ष, अभावग्रस्ता और स्वतंत्र भारत की सरकार द्वारा गांव की उपेक्षा का सहज और जीवत चित्रण हुआ है समकालीन समाज, राजनीति और लोकतन्त्र का असली स्वरूप उभर कर आया है, जिसमें आजादी का मतलब तीन थके हुए रग तथ ससद तेल की ऐसी घानी है, जिसमें आधा तेल और आधा पानी है। देश के अंतिम व्यक्ति से लेकर सर्वोच्च पदों पर आसीन राजनेताओं की स्थिति और कार्यप्रणाली को बड़ी बेबाकी से अभिव्यक्त किया है। धूमिल का काव्य अपने युग का दर्पण है और लोक जीवन के असली हालात का जीवन्त दस्तावेज है। जिसमें देश की सम्पूर्ण तस्वीर का रेखाचित्र खींचा गया है-

हिमालय से लेकर हिन्द महासागर तक
फैला हुआ जली हुई मिट्टी का ढेर है
जहां हर तीसरी जुबान का मतलब
नफरत है/साजिश है। अंधेरे हैं
यह मेरा देश है
और यह मेरे देश की जनता है
जनता क्या है
एक शब्द, सिर्फ एक शब्द है
कुहरा, कीचड़, कांच से
बना हुआ।

एक भेड़ है
जो दूसरों की ठण्ड के लिए
अपनी पीठ पर
ऊन की फसल ढो रही है।

Keywords: समकालीन यथार्थ, आदमी, विसंगति, विद्रूपता, सवेदना, राजनीति, लोकतन्त्र, लोकचेतना और लोकवेदना

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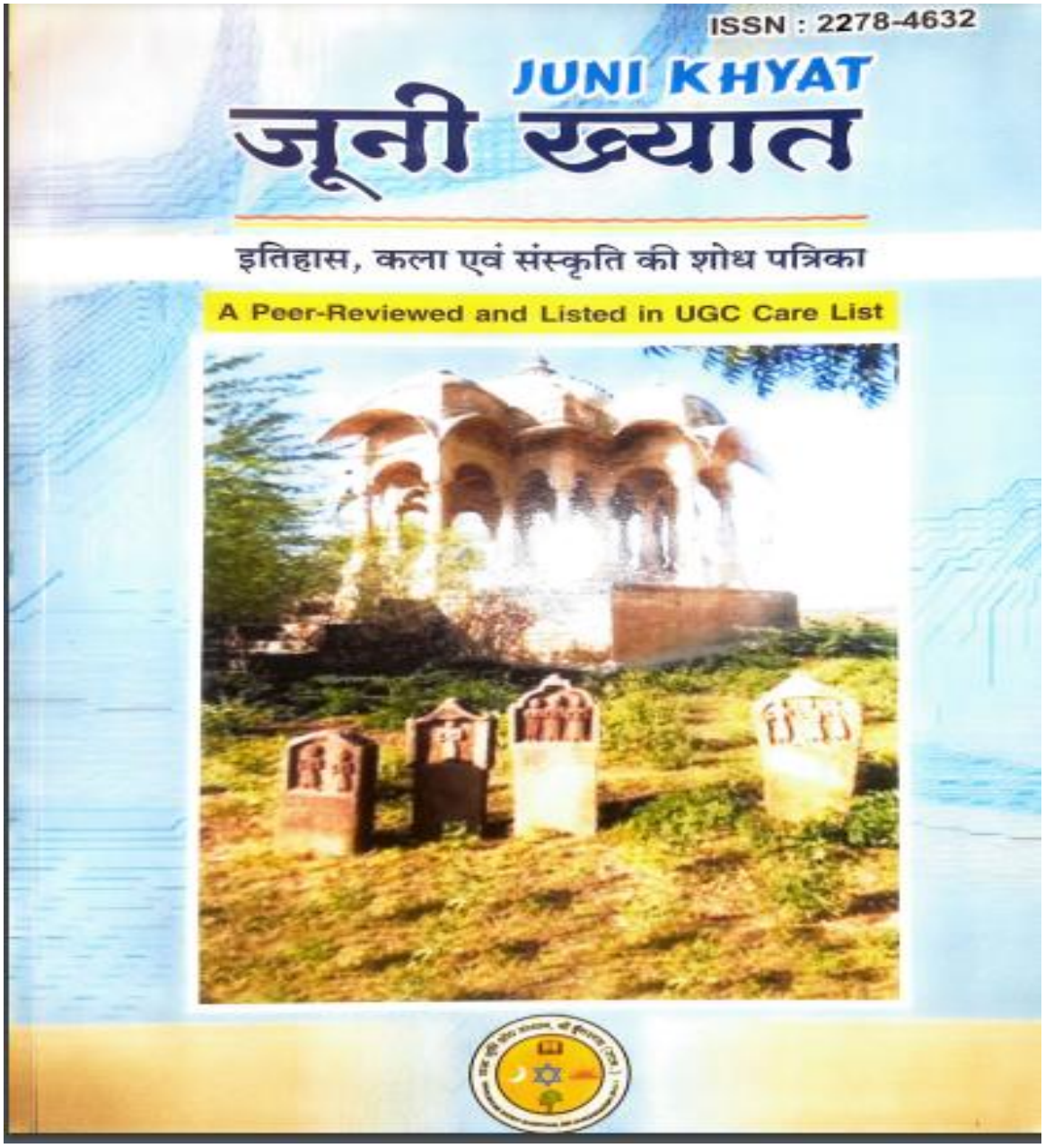

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अर्थव्यवस्था, आतंकवाद और मानवाधिकार ।

डॉ.रामलाल शर्मा
एसोसिएट प्रोफेसर अर्थशास्त्र विभाग CEO गवर्नमेंट कालेज संजौली, शिमला

प्रारंभ में अंतर्राष्ट्रीय विधि में ये संकल्पना पूर्णतः पोषित थी कि राष्ट्र ही अंतर्राष्ट्रीय विधि के विषय हैं किन्तु कालांतर में उसमें परिवर्तन हुआ और राज्यों के अतिरिक्त, व्यक्तियों को अधिकार और कर्तव्य दिये जाने के कारण उनको भी अंतर्राष्ट्री विधि का विषय माना जाने लगा।

द्वितीय विश्वयुद्ध के बाद यह निर्विवाद हो गया कि अंतर्राष्ट्रीय शांति व सुरक्षा उसी समय बनी रह सकती है जब व्यक्तियों की स्थिति में सुधार हो तथा उनके अधिकारों मूल स्वतंत्रताओं की अभिवृद्धी हो। इसी कारण व्यक्तियों को राज्यों द्वारा दिये गए कई अधिकारों में से एक अधिकार को 'मानवाधिकार' कहते हैं।

चूँकि मानव बुद्धिमान एवं विवेकशील प्राणी है। इसीकारण इसको कुछ ऐसे मूल तथा अहरणीय अधिकार प्राप्त रहते हैं जिसे सामान्यतया मानवाधिकार कहा जाता है। चूंकि ये अधिकार उसके अस्तित्व के कारण उनसे संबंधित रहते हैं अतः वे उनमें जन्म से ही निहीत रहते हैं। इस प्रकार मानवाधिकार सभी व्यक्तियों के लिए होते हैं, चाहे उनका मूलवंश, धर्म, लिंग तथा राष्ट्रीयता कुछ भी हो। ये अधिकार सभी व्यक्तियों के लिए आवश्यक हैं क्योंकि ये उनकी गरिमा एवं स्वतंत्रता के अनुरुप हैं तथा शारीरिक, भौतिक, नैतिक, सामाजिक कल्याण के लिए सहायक होते हैं।

विभिन्न राज्यों की सांस्कृतिक पृष्ठभूमि, उनके विचार तथा उनकी आर्थिक, सामाजिक और राजनैतिक स्थितियों में विभिन्नता के कारण 'मानवाधिकार' इस शब्द को परिभाषित करना कठिन है। लेकिन यह कहा ही जा सकता है कि मानवाधिकार का विचार मानवीय गरिमा के विचार से संबंधित है। अतः उन सभी अधिकारों को मानवाधिकार कहा जा सकता है जो मानवीय गरिमा को बनाये रखने के लिए आवश्यक है।

विएना के 1993 में मानवाधिकार सम्मेलन की घोषणा में यह कहा गया था कि सभी मानवाधिकार व्यक्ति में गरिमा और अंतर्निहित योग्यता से प्रोद्भुत होते हैं और 'व्यक्ति' मानवाधिकार तथा मूल स्वतंत्रताओं का केन्द्रीय विषय है। डी. डी. बसु मानवाधिकारों को उन न्यूनतम अधिकारों के रुप में परिभाषित करते हैं, जिन्हें प्रत्येक व्यक्ति को, बिना किसी अन्य विचार के, मानव परिवार का सदस्य होने के फलस्वरुप राज्य या अन्य लोकप्राधिकारी के विरुद्ध धारण करना चाहिए।

मानवाधिकार अविभाज्य एवं अन्योन्याश्रित होते हैं इसलिए संक्षिप्त में भिन्न-भिन्न प्रकार के मानवाधिकार नहीं हो सकते फिर भी संयुक्त राष्ट्र प्रणाली के अंतर्गत मानवाधिकार के क्षेत्र में किये गए विकास से यह स्पष्ट हो जाता है कि मानवाधिकारों को मुख्य रुप से दो भागों में बाँटा जा सकता है। अर्थात

1) सिविल एवं राजनैतिक अधिकार और

2) आर्थिक, सामाजिक एवं सांस्कृतिक अधिकार।

जब आतंक का व्यवस्थित प्रयोग कतिपय उद्देश्यों के विशेष रुप में राजनैतिक उद्देश्यों को पूरा करने के लिए किया जाता है तब सामान्यतया उसको आतंकवाद कहा जाता है।

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