

Shetkari Shikshan Sanstha's



ARTS, COMMERCE & SCIENCE COLLEGE, MAREGAON (ROAD)

Dist. Yavatmal- 445 303 (M.S.) India

(Affiliated to Sant Gadge Baba Amravati University, Amravati)

NAAC Accredited at 'B+' grade with CGPA 2.51 (Cycle-I)

3.3.2: Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five years

Sl. No.	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Year of publication	ISBN/ISSN number of the proceeding	Whether at the time of publication Affiliating Institution Was Same Yes/NO	Name of the publisher
2017-2018								
1	Dr. R. R. Chawre	"Navvodottar Katha: Rang Ani Antarang"	Parissparsh Baba		2017-2018	ISBN No.978-93-81289-50-1		
2	Dr. V. N. Chavhan	Pandharkawada Medicinal Plants	-----	-----	2017-2018	ISBN 13: 978-93-86623-21-8		DCF, Pandharkawada Forest Division
2018-2019								
1	Dr. A. B. Yawale	Arthur Miller- The Theme of Intra-Societal Buffet in his Plays			2018-2019	ISBN 978-93-87556-57-7		International Publications, Kanpur
2	Dr. P. P. Kulkarni	Business Economics B. Com-I Sem-II			2018-2019	ISBN- 978-93-88193-24-5		Dnyanpath Publication, Amravati

3	Dr. V. N. Chavhan	Text Book Of Botany B. Sc. First Semester	-----	-----	2018-2019	ISBN 13: 978-93-87278-11-0		Dnyanpath Publication, Shegaon Naka, Amravati 444603
4	Dr. N. R. Pawar	Text Book Of Physic B. Sc. First Semester			2018-2019	ISBN 978-93-87278-50-9		Dnyanpath Publication, Shegaon Naka, Amravati 444603
5	Dr. N. R. Pawar	Spectroscopic Characterization and Ultrasonic Study of α -Alumina Nanofluids			2018-2019	ISBN 978-81-8487-703-8		Narosa Publications, New Delhi
6	Dr. N. R. Pawar	Synthesis of Silicon Carbide Nanofluids and Study of its Ultrasonic Characterization			2018 - 2019	ISBN 978-81-8487-703-8		Narosa Publications, New Delhi
7	Dr. N. R. Pawar	Study of Acounstic and Thermodynamic Properties of Gallic Acid in Ethanol at Temperature 298K - 313K			2018 - 2019	ISBN 978-81-8487-703-8		Narosa Publications, New Delhi
8	Dr. N. R. Pawar	Ultrasonic Absorption and Thermoacoustic Study of Some RNA in Aqueous Solution by Non-Destructive Technique			2018 - 2019	ISBN 978-81-8487-703-8		Narosa Publications, New Delhi

9	Dr. N. R. Pawar	Ultrasonic Absorption and Thermoacoustic Study of Some DNA in Aqueous Solution by Non-Destructive Technique			2018 - 2019	ISBN 978-81-8487-703-8		Narosa Publications, New Delhi
10	Dr. N. R. Pawar	Synthesis of Boron Nitride Nanofluids and Study of its Ultrasonic Characterization			2018 - 2019	ISBN 978-81-8487-703-8		Narosa Publications, New Delhi
11	Dr. N. R. Pawar	Effect of Particle Size, Shape Upon Rheological Properties of Methanol Based Nanofluids at 303K			2018 - 2019	ISBN 978-81-8487-703-8		Narosa Publications, New Delhi
2019-2020								
1	Dr. G. L. Sodnar	egkRek xka/kh ;kaps jk"V ^{ah} ; ,dkRers lac/khps fopkj			2019-20	ISBN- 978-81-943484-1-2		Kapshikar publisher, Nagpur
2	Dr. P. P. Kulkarni	Principle of Economics B. Com-I Sem- I			2019-2020	ISBN- 978-93-88193-48-1		Dnyanpath Publication, Amravati
3	Dr. P. P. Kulkarni	Monetary System B. Com-II Sem-III			2019-2020	ISBN- 978-93-88193-43-6		
4	Dr. P. P. Kulkarni	Principles of Auditing B. Com-II Sem-III			2019-2020	ISBN- 978-93-88193-93-9		Eagle Leap Printers and Publisher PVT. Ltd, Pune

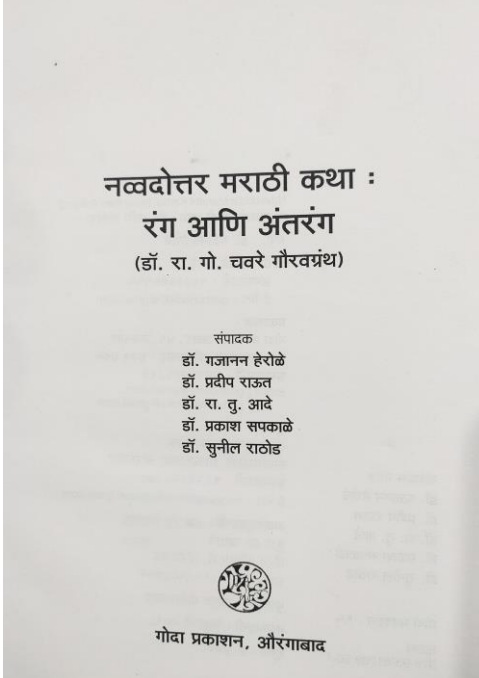
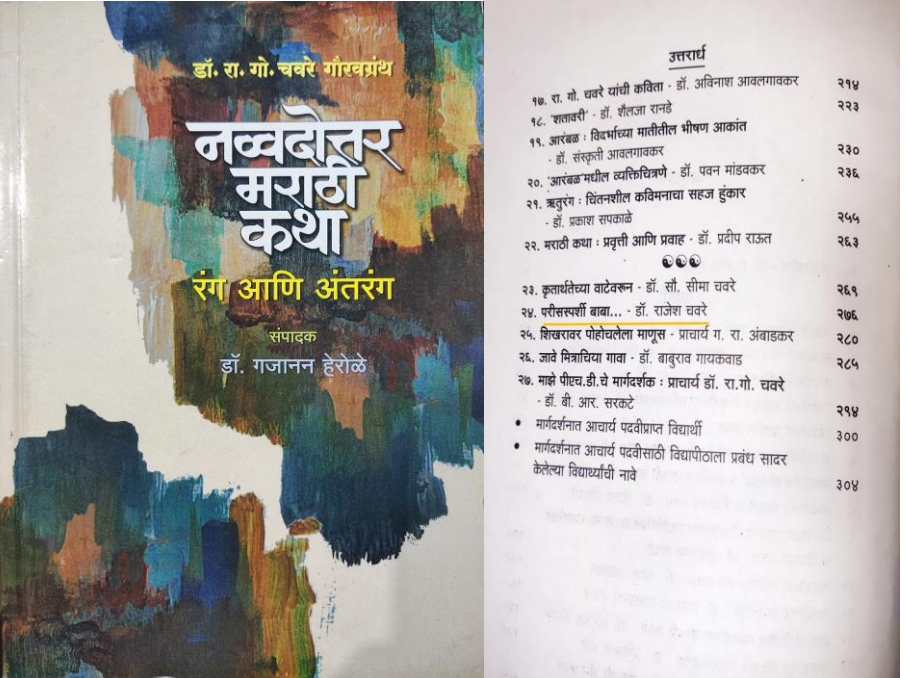
5	Dr. P. P. Kulkarni	Business Mathematics B. Com-II Sem-II			2019-2020	ISBN- 978-93-88193-44-3		
6	Dr. P. P. Kulkarni	Indian Financial System B. Com-II Sem-IV			2019-2020	ISBN- 978-93-88193-88-7		
7	Dr. P. P. Kulkarni	Business Frame work B. Com-III Sem-V			2019-2020	ISBN- 978-93-88193-66-5		
8	Dr. P. P. Kulkarni	LOCKDOWN MULE MAHARASHTRATIL KAMGARAVAR HONARA PARINAM			2019-2020	ISBN- 978-81-942757-4-7.		E-journal
2020-21								
1	Dr. G. L. Sodnar	राष्ट्रउन्नतीमध्ये सावित्रीबाई फुले यांचे योगदान			2020-2021	ISBN- 978-81-951551-5-6		B. Aadhar
2021-22								
1	Dr. V. C. Ghodkhande	भारतीय कृषी मूल्य धोरण आणि कृषी मूल्य आयोग 251			2021-2022	ISBN- 978-81-95159-9		
2	Dr. V. C. Ghodkhande	सावित्री बाई फुले			2021-2022	ISBN- 978-81-951599-6-3		
3	Dr. V. C. Ghodkhande	कौटूंबिक संसाधनाचे व्यवस्थापन आणि गृहसजावट			2021-2022	ISBN- 978-93-91097-11-0		
4	Dr. M. M. Kamble	मानवी समाजाची प्रगती करण्यासाठी बुद्ध धम्माची गरज पृष्ठ क्र. ७१	बौद्ध समाजाच्या समस्या		2021-2022	ISBN- 978-81-95155-1		

5	Dr. M. M. Kamble	अस्पृश्यतेचे उच्चाटन करण्याचे काम पृष्ठ क्र. ११३	The Contribution of Social Reformers in The Nation Building		2021-2022	ISBN- 978-81-951599-6-3		
6	Dr. M. N. Tanurkar	Hkkjrh; 'ksrhpkl bfrgkl			2021-2022	ISBN No - 978 - 81 - 951599 - 7-0		Indian Agriculture and New Agriculture Acts
7	Dr. P. P. Kulkarni	The Contribution of social reformers in the nation buiding			2021-2022			
8	Dr. P. P. Kulkarni	Recent Trends in Commerce, Economics and Manegement			2021-2022			E-Book
9	Dr. S. B. Gaikwad	Challenges of New Agriculture Policy 2020			2021-2022	ISBN- 978-81-951599-7-0		Eagle Leap Printers & Publisher Pvt. Ltd. Pune
10	Dr. S. B. Gaikwad	Neoclassical Period in English Literature			2021-2022	ISBN- 978-81-951599-8-7		Eagle Leap Printers & Publisher Pvt. Ltd. Pune
11	Dr. S. R. Kelode	Thermal Analysis of Metal Complexes in Chemistry				ISBN 978-3-659-90285-7		Lap Lambert
12	Dr. S. G. Chirde	MCQ's in ZOOLOGY			2021-2022	ISBN 978-93-91331-14-6		DnyanPath Publication, Amravati

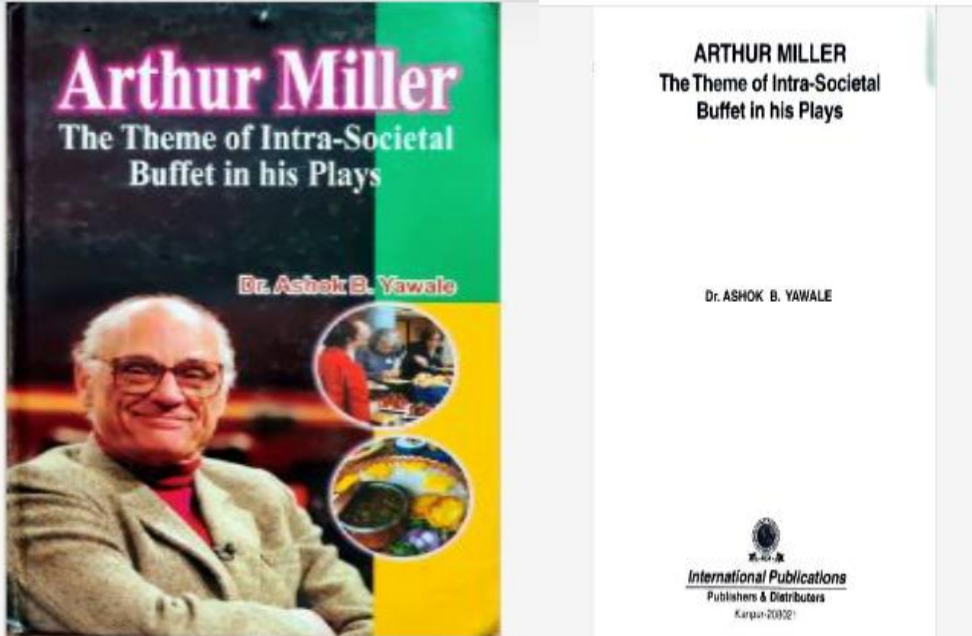


3m/326
Principal
Arts, Comm. & Sci. College
Maregaon, Dist. Yavatmal (M.S.)

2017-18

Sr. No.	Name of Author	Screenshot	
1.	Dr R R Chaware		

2018-19

Sr. No.	Name of Author	Screenshot
1.	Dr A B Yawale	 The screenshot displays the book cover and title page for the work 'Arthur Miller: The Theme of Intra-Societal Buffet in his Plays' by Dr. Ashok B. Yawale. The cover is divided into a green top half and a yellow bottom half. The top half contains the title 'Arthur Miller' in large pink letters, followed by the subtitle 'The Theme of Intra-Societal Buffet in his Plays' in white. Below the title is a portrait of Arthur Miller. The bottom half of the cover features two circular inset images: one showing a group of people at a table and another showing a close-up of food. The author's name 'Dr. Ashok B. Yawale' is printed in red on the yellow background. The title page is white and contains the title and author's name in black. At the bottom of the title page, the publisher's name 'International Publications' is printed, along with their address and contact information. On the right side of the title page, there is a list of details including the ISBN, book title, author, first edition, and price. A copyright notice is also present, stating that all rights are reserved and that no part of the publication may be reproduced without prior written permission. The publisher's name 'International Publications' is printed at the bottom of the title page, along with their address and contact information.

2.

Dr P P Kulkarni



9503237806
8600353712
pioneerprakashan2017@gmail.com

Ref. No. : PIO/2020/137

Date : 17/08/2020

Certificate of Appreciations

We hereby certify that

Dr. Pravin P. Kulkarni

M.Com, M.Phil, NET, Ph.D.

In recognition of your professional excellence, spirit and dedication in writing the books ISBN recognized by 'Eagle Study Material' under 'Pioneer Prakashan' and the details has been given below.

S. N.	Title	Type	Edition	Language	ISBN
1	अर्थशास्त्राची प्रामुख्ये (Principle of Economics) B.Com - Part-I, First Semester	Co-Author	First, June 2019	Marathi	978-83-88193-48-1
2	व्यावसायिक अर्थशास्त्र (Business Economics) B.Com - Part-I, Second Semester	Co-Author	First, February 2019	Marathi	978-83-88193-24-5
3	वैदेशिक व्यापार (Monetary System) B.Com - Part-II, Third Semester	Co-Author	First, June 2019	Marathi	978-83-88193-45-8
4	अंकित (Accounting) B.Com - Part-II, Third Semester	Co-Author	First, June 2019	Marathi	978-83-88193-55-9
5	व्यावसायिक अंकगणित (Business Mathematics) B.Com - Part-II, Third Semester	Co-Author	First, June 2019	Marathi	978-83-88193-44-3
6	भारतीय वित्तीय व्यवस्था (Indian Financial System) B.Com - Part-II, Fourth Semester	Author	First, January 2020	Marathi	978-83-88193-86-7
7	व्यावसायिक विषयक रचना (Business Frame Work) B.Com - Part-III, Fifth Semester	Co-Author	First, September 2019	Marathi	978-83-88193-86-5

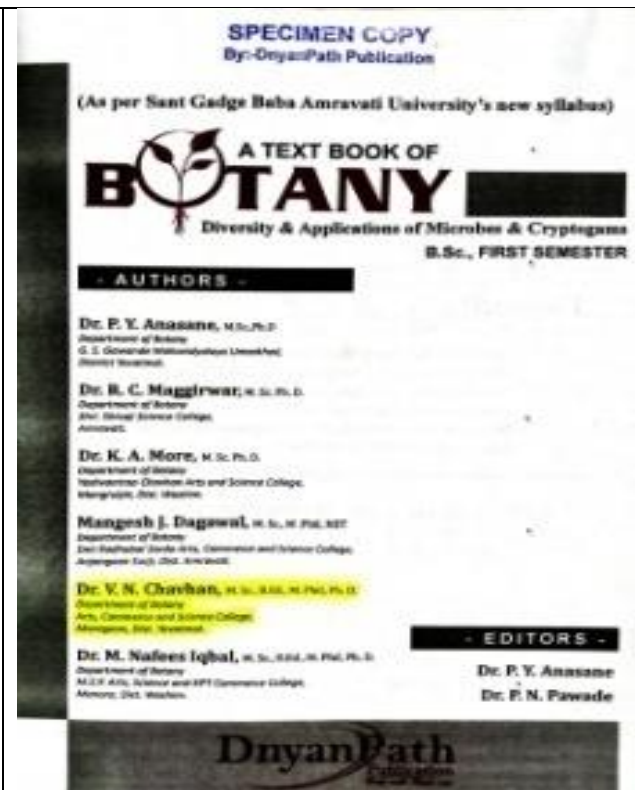
Sachin D. Sukalkar
PUBLISHER
Pioneer Prakashan, Amravati

Sushil M. Sukalkar
CHIEF EDITOR
Pioneer Prakashan, Amravati

Reg. Office : Mahatma Fule Sankul, Shegaon Naka, V.M.V. Road, Amravati (M.S.) 444603

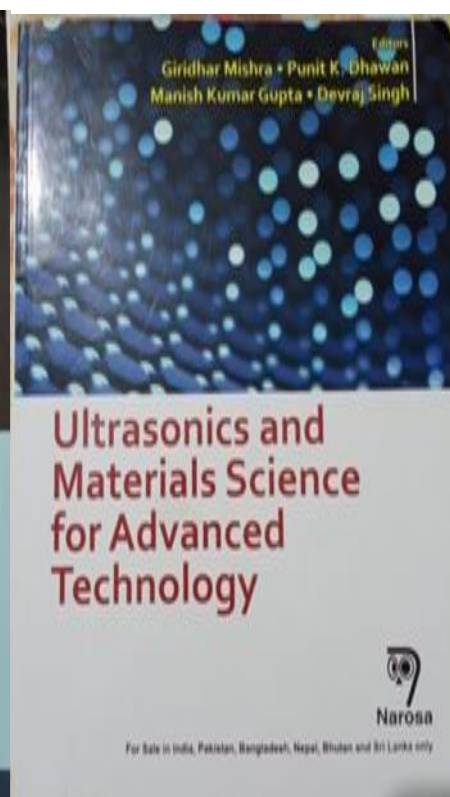
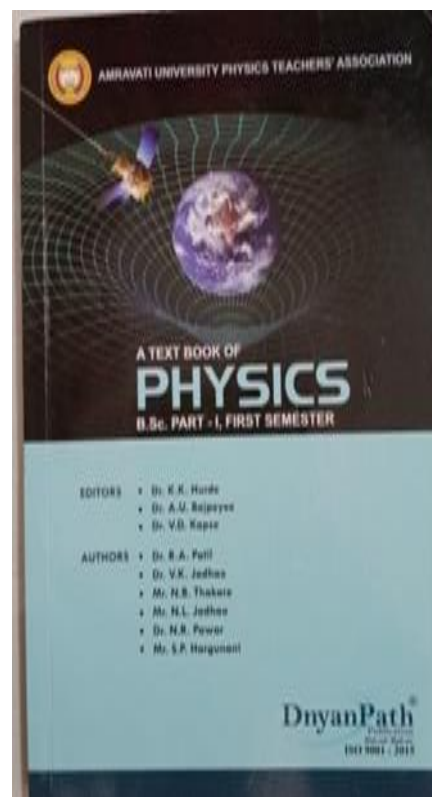
3.

Dr V N Chavhan



4.

Dr N R Pawar



Contents		xiii
Advances in Ultrasonic Gauging and Imaging of Tubes and Pipes		128
N. Pavan Kumar, V.H. Patankar		
Effect of Particle Size, Shape Upon Rheological Properties of Methanol based Nanofluids at 303K		134
Nandkishor N. Padole, Omprakash P. Chimankar, N. R. Pawar and Vilas Tathane		
Decoloration of Synthetic Textile Swiss Pink Dye Using a Potent Bacterial Isolate		139
Shweta Singh, Roshan Lal Goutam, and Rani Narayan		
Bio-polymer Electrolytes Based on CS-NaI-IL: Structural, Thermal and Electrical Transport Properties Study		145
A. L. Saraj		
Synthesis of Boron Nitride Nanofluids and Study of its Ultrasonic Characterization		151
R. D. Chavhan, N. R. Pawar, O. P. Chimankar and S. J. Dhole		
Ultrasonic Absorption and Thermoacoustic Study of Some DNA in Aqueous Solution by Non Destructive Technique		155
P. D. Bageshwar, N. R. Pawar and O. P. Chimankar		
Ultrasonic Absorption and Thermoacoustic Study of Some RNA in Aqueous Solution by Non Destructive Technique		158
Deoram V. Nandanwar, P. D. Bageshwar, N. R. Pawar and O. P. Chimankar		
Study of Acoustic and Thermodynamic Properties of Gallic Acid in Ethanol at Temperature 298K-313K		162
G.M. Jamankar, M.S. Deshpande, N.R. Pawar		
Temperature Dependent Structural Transition in Manganese Oxide and its Electrochemical Study		166
Avinash Kumar Singh, Tarun Kumar Dhimani, GBVS Lakshmi and Pratima R. Solanki		
A Survey on Machine Learning Methods for Phishing Detection		172
Pravin Kumar Pandey, Sandip Kumar Singh, Deep Prakash Singh Sengupta		
Thermo-acoustical Investigation of Nitrogenous Urea at Different Concentration and Temperature		177
Paritosh L. Mishra, Ajay B. Lad, Unvashu P. Manik		
Assessment of Plant Growth Promoting activity of Bacteria Isolated from the Rhizospheric region of Carrot (Daucus carota)		183
S. Sanam, S.P. Tiwari, R. Sharma		
Optimization of Surface Sterilization Process for Isolation and Cultivation of Bacterial Endophytes from Allium Sativum		189
P. Srivastava, S.P. Tiwari, R. Sharma		

	Contents xiii		Contents xv
Advances in Ultrasonic Gauging and Imaging of Tubes and Pipes <i>N. Pavan Kumar, V.H. Patankar</i>	128	Role of Science Communication in Application of Earthworm on Agricultural Soil Restoration <i>Manoj Mishra and Sudhir K. Upadhyay</i>	267
✓ Effect of Particle Size, Shape Upon Rheological Properties of Methanol based Nanofluids at 303K <i>Nandkishor N. Padole, Omprakash P. Chimankar, N. R. Pawar and Vilas Tabhane</i>	134	Investigation of Zirconium Nanowires by Elastic, Thermal and Ultrasonic Analysis <i>Mohit Gupta, Sudhanshu Tripathi, Devraj Singh and R.R. Yadav</i>	273
Decoloration of Synthetic Textile Swiss Pink Dye Using a Potent Bacterial Isolate <i>Shweta Singh, Roshan Lal Gautam, and Ram Narayan</i>	139	Dependence of Negative Index Materials on Electric Permittivity and Magnetic Permeability by Effective Medium Theory <i>Girijesh N. Pandey, Khem B. Thapa, Anil Kumar Shukla and Suresh K. Sharma</i>	277
Bio-polymer Electrolytes Based on CS-Nal-IL: Structural, Thermal and Electrical Transport Properties Study <i>A. L. Saraj</i>	145	Synthesis and Optical Properties of SnS Nanoparticles <i>B. K. Pandey, Ram Gopal</i>	285
✓ Synthesis of Boron Nitride Nanofluids and Study of its Ultrasonic Characterization <i>R. D. Chavhan, N. R. Pawar, O. P. Chimankar and S. J. Dhoble</i>	151	Attenuation of Ultrasound in B1 and B2 Structures of CdO <i>Jyoti Bala, Vyoma Bhalia, Devraj Singh, C.P. Yadav and D.K. Pandey</i>	289
✓ Ultrasonic Absorption and Thermoacoustic Study of Some DNA in Aqueous Solution by Non Destructive Technique <i>P. D. Bageshwar, N. R. Pawar and O. P. Chimankar</i>	155	Ultrasonic Attenuation in Lanthanum Monopnictides <i>Chinmayee Tripathy, Devraj Singh and Rita Paikaray</i>	293
✓ Ultrasonic Absorption and Thermoacoustic Study of Some RNA in Aqueous Solution by Non Destructive Technique <i>Deoram V. Nandanwar, P. D. Bageshwar, N. R. Pawar and O. P. Chimankar</i>	158	Ultrasonic and Thermal Properties of Cobalt Nanowires <i>Mohit Gupta, Sudhanshu Tripathi, Devraj Singh and R.R. Yadav</i>	299
✓ Study of Acoustic and Thermodynamic Properties of Gallic Acid in Ethanol at Temperature 298K-313K <i>G.M. Jamankar, M.S. Deshpande, N.R. Pawar</i>	162	Non-linear Elastic, Mechanical and Ultrasonic Properties of Hexagonal Silicon Carbide <i>Sudhanshu Tripathi, Rekha Agarwal, Devraj Singh</i>	303
Temperature Dependent Structural Transition in Manganese Oxide and its Electrochemical Study <i>Avinash Kumar Singh, Tarun Kumar Dhiman, GBVS Lakshmi and Pratima R. Solanki</i>	166	Elastic and Ultrasonic Properties of B1 and B2 Phase Boron Monopnictides <i>Jyoti Bala, Punit K. Dhawan, Giridhar Mishra and Devraj Singh</i>	307
A Survey on Machine Learning Methods for Phishing Detection <i>Pravin Kumar Pandey, Sandip Kumar Singh, Deep Prakash Singh Senger</i>	172	Analysis of ZnO as Membrane Material for Capacitive Micromachined Ultrasonic Transducer <i>Sudhanshu Tripathi, Rekha Agarwal and Rashmi Vashiasth</i>	312
Thermo-acoustical Investigation of Nitrogenous Urea at Different Concentration and Temperature <i>Paritosh L. Mishra, Ajay B. Lad, Urvashi P. Manik</i>	177	✓ Synthesis of Silicon Carbide Nanofluids and Study of its Ultrasonic Characterization <i>N. R. Pawar, R. D. Chavhan, O. P. Chimankar and S. J. Dhoble</i>	318
Assessment of Plant Growth Promoting activity of Bacteria Isolated from the Rhizospheric region of Carrot (<i>Daucus carota</i>) <i>S. Sonam, S.P. Tiwari, R. Sharma</i>	183	✓ Synthesis, Spectroscopic characterization and Ultrasonic Study of α -Alumina Nanofluids <i>Mrunal Pawar, R. D. Chavhan, O. P. Chimankar, S. J. Dhoble and N. R. Pawar</i>	322
Optimization of Surface Sterilization Process for Isolation and Cultivation of Bacterial Endophytes from <i>Allium Sativum</i> <i>P. Srivastava, S.P. Tiwari, R. Sharma</i>	189	EPR and Optical Study of Cu^{2+} Doped Potassium Hydrogen Bis Homophthalate <i>Awadhesh Kumar Yadav and Ram Kripal</i>	327
		Acoustic Method for the Estimation of Radius, van der Waals Constants and Molecular Dimension of Pure Organic Liquids <i>Ramakant, Shekhar Srivastava</i>	332
		Thermal and Lattice Dynamical Study of MgO by (VTBFS) Model <i>U C Srivastava</i>	337
		A Novel Decision Tree-based Method for Phishing Detection <i>Pravin Kumar Pandey, Sandip Kumar Singh</i>	343

Synthesis, Spectroscopic Characterization and Ultrasonic study of α -Alumina Nanofluids

Mrunal Pawar¹, R. D. Chavhan², O. P. Chimankar², S. J. Dhoble² and N. R. Pawar³*

¹St.Vincent Pallotti College of Engineering and Technology, Nagpur-441 108, India

²Department of Physics, RTM Nagpur University, Nagpur- 440 033, India

³Department of Physics, Arts, Commerce and Science College, Moregaon - 445 303, India

*E-mail: pawarsir1@gmail.com

ABSTRACT

Nanofluids are solid-liquid composite materials consisting of solid nanoparticles or nanofibers with sizes typically of 1-100 nm suspended in liquid. Nanofluids have attracted great interest recently because of reports of greatly enhanced thermal properties. When Nanoparticles are mixed with base fluid, some of the particles are remain suspended in the fluid. These suspended particles in the base fluid are considerably changes the transfer characterization and flow of base fluid. The larger surface area of nanoparticles not only increases the thermal transfer but also increases the stability of suspension. Nanoparticles are expected to have a surface to volume ratio given as large surface to volume ratio proportional to the inverse of particle size of nanomaterials changes the role played by the surface atoms in determining their thermodynamic properties [1-3]. α - Al_2O_3 nanoparticles has high dimensional stability, it is widely used in a variety of plastics, rubber, ceramics, refractory products for reinforcement toughening, in particular, significantly to improve the ceramic density, finish, thermal fatigue resistance, fracture toughness, creep resistance and wear resistance. As it is a high performance material of far infrared emission, it is widely used in fiber fabric products and high pressure sodium lamp as far-infrared emission and thermal insulation materials.

Nanoparticles of alpha alumina (α - Al_2O_3) was prepared by sol-gel method [4-7] from Aluminum isopropoxide [$\text{Al}(\text{OC}_3\text{H}_7)_3$] and aluminum nitrate. Starting solution was prepared by adding aluminum isopropoxide [$\text{Al}(\text{OC}_3\text{H}_7)_3$] gradually in 0.2 M aluminum nitrate and solution continuously stirred for 48 hours. Later, Sodium dodecylbenzen sulfonate (SDBS) was added and stirred for one hour. Now this solution were heated up to 60°C and stirred constantly for evaporation process. Now the paste so obtained was heated at 90°C for 8 hours, we get nanoparticles of alpha alumina (α - Al_2O_3) in powder form. The prepared sample was characterized by X-ray diffraction (XRD), FTIR and Scanning electron microscopy (SEM). Average particle size has been estimated by using Debye-Scherrer formula [8-9]. It was found to be 30 nm. Nanofluids of α - Al_2O_3 in methanol base fluid were prepared and their acoustical studies were made such that different types of interactions could be assessed. Thermo-acoustical parameters of this nanofluids system were computed from ultrasonic velocities, densities and viscosities at temperatures 293K, 298K, 303K, 308K and 313K at fixed frequency 5MHz over the entire range of concentrations. The obtained results of present investigation have been discussed in the light of interactions between the α - Al_2O_3 nanoparticles and the molecules of methanol based fluids.

Keywords: Nanofluids, spectroscopic characterization; ultrasonic characterization, XRD, FTIR, SEM

1. Introduction

α - Al_2O_3 nanoparticles has high dimensional stability, it is widely used in a variety of plastics, rubber, ceramics, refractory products for reinforcement toughening, in particular, significantly to improve the ceramic density, finish, thermal fatigue resistance, fracture toughness, creep resistance and wear resistance. As it is a high performance material of far infrared emission, it is widely used in fiber fabric products and high pressure sodium lamp as far-infrared emission and thermal insulation materials. In addition, due to high

Synthesis of Silicon Carbide Nanofluids and Study of its Ultrasonic Characterization

N. R. Pawar¹*, R. D. Chavhan², O. P. Chimankar² and S. J. Dhoble²

¹Department of Physics, Arts, Commerce and Science College, Moregaon - 445 303, India

²Department of Physics, RTM Nagpur University, Nagpur- 440 033, India

* E-mail: pawarsir1@gmail.com

ABSTRACT

Silicon Carbide (SiC) nanofluids were synthesized by two step method. In this method SiC nanopowder was initially prepared and the powder was dispersed in methanol base fluid [1-3]. The nanofluid exhibits much greater properties as compared to base fluid. SiC Nanoparticles exhibits characteristics like high thermal conductivity, high stability, high purity, good wear resistance and a small thermal expansion co-efficient. These traits make it ideal for applications across a wide range of domains, with more being uncovered by the research of academics and engineers.

SiC nanoparticles have been synthesized by sol-gel method [4-5]. The mixture of SiO_2 :Mg in the molar ratio 1:2 heated in the furnace at 650°C for 6 hours. For an acid etching of the obtained product for 5 hour a mixture of HF 10% wt and HNO_3 4 M were used. Then the mixture is washed with distilled water and dried at room temperature. The final product is SiC in powder form. The prepared sample was characterized by X-ray diffraction (XRD), FTIR and Scanning electron microscopy (SEM). Average particle size has been estimated by using Debye-Scherrer formula [6-8]. It was found to be 50 nm. Nanofluids of SiC in methanol base fluid were prepared and their acoustical studies were made such that different types of interactions could be assessed. Thermo-acoustical parameters of this nanofluids system were computed from ultrasonic velocities, densities and viscosities at temperatures 293K, 298K, 303K, 308K and 313K at fixed frequency 5MHz over the entire range of concentrations. The obtained results of present investigation have been discussed in the light of interactions between the SiC nanoparticles and the molecules of methanol based fluids.

Keywords: Nanofluids, ultrasonic characterization, XRD, FTIR, SEM

1. Introduction

Silicon Carbide Nanoparticles is known for its stability, refractory properties, wear resistance, thermal conductivity, small thermal expansion co-efficient, and resistance to oxidation at high temperatures. It exhibits characteristics like high thermal conductivity, high stability, high purity, good wear resistance and a small thermal expansion co-efficient. These particles are also resistant to oxidation at high temperatures. SiC nanoparticles have been synthesized by sol-gel method. The prepared sample was characterized by X-ray diffraction (XRD), FTIR and Scanning electron microscopy (SEM). Thermo-acoustical parameters of SiC nanofluid were computed from ultrasonic velocities, densities and viscosities at temperatures 293K, 298K, 303K, 308K and 313K at fixed frequency 5MHz over the entire range of concentrations.

2. Method of Synthesis of SC Nanofluids

Silicon carbide nanoparticles have been synthesized by sol-gel method [9-10]. The mixture of SiO_2 :Mg in the molar ratio 1:2 heated in the furnace at 650°C for 6 hours. For an acid etching of the obtained product for 5 hour a mixture of HF 10% wt and HNO_3 4 M were used. Then the mixture is washed with distilled water and dried at room temperature. The final product is SiC in powder form. SiC nanopowder was initially prepared and the powder was dispersed in methanol base fluid.

G.M. Jamankar^{1,*}, M.S. Deshpande^{2,**}, N.R. Pawar²

¹Department of physics, Vidya Niketan College, Chandrapur Dist. Chandrapur (M.S) INDIA
²Department of physics, ACS College MaregaonDist.Yavatmal (M.S.), INDIA
Email: *gm_jamankar@rediffmail.com; **mil2des@yahoo.com

The properties of tannins are based on their chemical structures having two or three phenolic/hydroxyl groups on a phenyl ring, in a molecule of moderate large size. Ultrasonic velocity (v), density (ρ) and viscosity (η) for binary liquid mixture of molar concentration range 0.1M-0.9M and some thermo-acoustical range 298K-313K over the entire composition range were measured at different temperatures. The experimental parameters such as compressibility, acoustic impedance (Z), Gibbs free energy (ΔG), Classical parameters like adiabatic exponent (γ) and speed of sound (c_s) are computed. The non-linear variations of these resulting acoustical parameters with composition (x_2) have been observed. The changes in the thermodynamic properties of the mixture at different concentration of the solute explained on the basis of structural changes occurring in a solution. Ultrasonic parameter measurements expose the thermodynamic properties of the liquid mixture.

Keywords: Tannins, Gallic acid, adiabatic compressibility, Gibb's energy, acoustic impedance.

Ultrasonic investigation of liquid mixture containing components is of significant importance in understanding intermolecular interaction between the component molecules as that finds application in several industrial and technological processes. The rapid development of ultrasonic techniques and the introduction of new materials for producing powerful ultrasonic vibrations have opened up wide fields of research and technical applications in medicine and industry. Ultrasonic techniques and FTIR analysis having significant importance in understanding intermolecular interaction between the component molecules as that finds application in several industrial and technological processes(1-2). Here the attempts have been made for experimental investigations of derived parameters such as the ultrasonic velocity, adiabatic compressibility (β_a), density and viscosity of pure binary liquid Gallic acid in ethanolic various molar concentrations in the range of 0.1 mol to 0.9 mol for the ultrasonic frequency 2 MHz at 298K, 303K and 308K and d131K.

The liquid mixture of various concentrations in mole fraction was prepared by taking AR grade chemicals. The study was carried out for the temperatures 298K–313K at fixed frequency 2 MHz and temperature of the liquid mixture was kept constant within an accuracy of ± 0.1 K by using thermostat. The experimental temperature was maintained constant by circulating water with the help of thermostatic water bath. Viscosity measurements were taken using Ostwald viscometer with an accuracy of ± 0.1 Kg/m³. The density of the solution was determined accurately using 10ml specific gravity bottle and electronic balance and accuracy in the density measurement is $\pm 1 \times 10^{-3}$ gm/cm³. An average of triple measurements was taken into account.

Deoram V. Nandanwar¹, P. D. Bageshwar², N. R. Pawar^{3,*} and O. P. Chimankar⁴

¹Department of Physics, Shri M. M. College of Science Nagpur- 440 024, India
²Department of Physics, Mungsoji Maharaj Mahavidyalaya, Darwha – 445 304, India
³Department of Physics, Arts, Commerce and Science College, Maregaon – 445 303, India
⁴Department of Physics, RTM Nagpur University, Nagpur- 440 033, India
 * E-mail: pawarsiri@gmail.com

Ultrasonic absorption of RNA in double distilled water by non destructive technique is essential for utilizing them in biomedical technology. In biological sciences nitrogenous bases are increasingly termed nucleobases because of their role in nucleic acids their flat shape is particularly important when considering their roles as the building blocks of RNA [1-4]. The present paper reports the ultrasonic absorption and thermo-acoustic study of some RNA in double distilled water by nondestructive technique at different molar concentrations, temperatures and at frequency 3 MHz of the ultrasonic transducer. The non-linear and complex behavior of investigated aqueous solution of RNA in medium helps to elucidate separation and strength of intermolecular interactions between the components in the medium [5-6].

Keywords: Aqueous solution of RNA; ultrasonic absorption; thermoacoustic parameters; structural relaxation process, etc

In the biological sciences nitrogenous bases are increasingly termed as nucleobases because of their role in nucleic acids their flat shape is particularly important when considering their roles as the building blocks of RNA. There are five nitrogenous bases and all are non-polar. Purines are Adenine and Guanine, while Pyrimidines are Cytosine, Thymine and Uracil. These are used in the construction of nucleotides which in turn build up the nucleic acids like RNA. The present study deals with the experimental measurements of ultrasonic velocity, absorption, density and viscosity of nitrogenous bases in aqueous solution. The various thermo-acoustical and derived parameters and ultrasonic absorption were study. Adenine, Guanine, Cytosine, Thymine and Uracil are RNA. This study play very important role for determination of strength of intermolecular interactions between the components in the medium

The plot of ultrasonic velocity (u) versus molar concentration of aqueous solution of uracil, shows that, ultrasonic velocity increases with increase in molar concentration except peak at 0.06 due to molecular aggregation indicating association in the component molecules. The association in the constituent molecules may involve due to hydrogen bonding or due to dipole-induced dipole interactions between the constituents. The variation of velocity with molar concentration is uracil in aqueous solution is given in figure 1. The plot of ultrasonic velocity (u) versus molar concentration of aqueous solution of thymine, shows that, the ultrasonic velocity increases with increase in molar concentration except peak at 0.06 due to molecular

Ultrasonic Absorption and Thermoacoustic Study of Some DNA in Aqueous Solution by Non Destructive Technique

P. D. Bageshwar¹, N. R. Pawar^{2,*} and O. P. Chimankar³

¹Department of Physics, Mungaji Maharaj Mahavidyalaya, Darwaha - 445 304, India

²Department of Physics, Arts, Commerce and Science College, Maregaon - 445 303, India

³Department of Physics, RTM Nagpur University, Nagpur- 440 033, India

*E-mail: pawar1@gmail.com

ABSTRACT

Ultrasonic absorption of DNA in double distilled water by non destructive technique is essential for utilizing them in biomedical technology. In biological sciences nitrogenous bases are increasingly termed nucleobases because of their role in nucleic acids their flat shape is particularly important when considering their roles as the building blocks of DNA. The present paper reports the ultrasonic absorption and thermo-acoustic study of some DNA in double distilled water by nondestructive technique at different molar concentrations, temperatures and at frequency 3 MHz of the ultrasonic transducer. The non-linear and complex behavior of investigated aqueous solution of DNA in medium helps to detect phase separation and strength of intermolecular interactions between the components in the medium.

Keywords: Aqueous solution of DNA; ultrasonic absorption; thermoacoustic parameters; structural relaxation process, etc

1. Introduction

Ultrasonic wave velocity in a medium provides valuable information about the physical properties of the medium [1-3]. It also provides important information about various inter and intra-molecular processes such as relaxation of the medium or the existence of isomeric states or the exchange of energy between various molecular degrees of freedom [4-6]. Ultrasonic parameters are extensively being used to study molecular interactions in pure liquids binary liquid mixtures and ionic interactions in single and mixed salt solutions of bio-liquids [7-8]. The experimental investigations have shown that derived parameters provide a better insight into molecular processes. Aqueous of Adenine of DNA is used for this study.

2. Results and Discussion

Figure 1 contains the plot of ultrasonic velocity versus molar concentration of adenine in aqueous solution at different temperatures. It is observed that ultrasonic velocity increases with increase in molar concentration of thymine and there is complex formation at molar concentration 0.06 due to molecular aggregation. The association in the constituent molecules may involve due to hydrogen bonding or due to dipole-induced dipole interaction between the constituent molecules. Amino group in thymine acts as hydrogen bond acceptor or donor, hence association may be possible through hydrogen bonding. Figure 2 shows the variation of density with molar concentration of adenine in aqueous solution. It is observed that density increases with increase in concentration of thymine in aqueous solution. Increase in density decreases the volume indicating association in component molecules. It may be increase due to structural reorganization.

Synthesis of Boron Nitride Nanofluids and Study of its Ultrasonic Characterization

R. D. Chavhan¹, N. R. Pawar^{2,*}, O. P. Chimankar³ and S. J. Dhoble²

¹Department of Physics, RTM Nagpur University, Nagpur- 440 033, India

²Department of Physics, Arts, Commerce and Science College, Maregaon - 445 303, India

*E-mail: pawar1@gmail.com

ABSTRACT

Boron nitride (BN) nanofluids were synthesized by two step method. In this method BN nanopowder was initially prepared and the powder was dispersed in methanol base fluid. The nanofluid exhibits much greater properties as compared to base fluid. BN nanoparticles possess high thermal conductivity, and are a good conductor of heat. They are also a good electrical insulator, and have high-temperature lubricity features. Boron nitride nanoparticles are graded as an irritant and could possibly cause serious eye irritation, and allergy or asthma symptoms or breathing difficulties if inhaled. Boron nitride nanoparticles should be sealed in vacuum and stored in cool and dry room so as to avoid damp reunion as it would affect its dispersion performance and other usage effects [1-3].

BN nanoparticles were synthesized via sol-gel method by using 6.18g boric acid (H_3BO_3 , Merck) dissolved in 200 ml distilled water. The solution is kept at 100°C. The 6.30g melamine $C_3H_3N_3$, Merck is now added to the solution. The material prepared is placed upto 48 hours in room temperature. $B_3N_3O_3H$ is obtained after filtering and drying the solution. This is the precursor of BN. Then it is heated at 500°C temperature for three hours without any gas flow. After that, material heated under nitrogen gas flow. Nitrogen gas flow is allowed for one hour with 800°C. The sample so obtained was grinded to get it in powdered form [4-6]. The prepared sample was characterized by X-ray diffraction (XRD), FTIR and Scanning electron microscopy (SEM). Average particle size has been estimated by using Debye-Scherrer formula [7-8]. It was found to be 70 nm. Nanofluids of BN in methanol base fluid were prepared and their acoustical studies were made such that different types of interactions could be assessed. Thermo-acoustical parameters of this nanofluids system were computed from ultrasonic velocities, densities and viscosities at temperatures 293K, 298K, 303K, 308K and 313K at fixed frequency 5MHz over the entire range of concentrations. The obtained results of present investigation have been discussed in the light of interactions between the nanoparticles and the molecules of methanol based fluids.

Keywords: Nanofluids; ultrasonic characterization; XRD; FTIR; SEM.

1. Introduction

Boron nitride nanoparticles possess high thermal conductivity, and are a good conductor of heat. They are also a good electrical insulator, and have high-temperature lubricity features. Boron nitride nanoparticles are graded as an irritant and could possibly cause serious eye irritation, and allergy or asthma symptoms or breathing difficulties if inhaled. Boron nitride nanoparticles should be sealed in vacuum and stored in cool and dry room so as to avoid damp reunion as it would affect its dispersion performance and other usage effects. BN nanoparticles have been synthesized by sol-gel method. The prepared sample was characterized by X-ray diffraction (XRD), FTIR and Scanning electron microscopy (SEM). Thermo-acoustical parameters of SC nanofluid were computed from ultrasonic velocities, densities and viscosities at temperatures 293K, 298K, 303K, 308K and 313K at fixed frequency 5MHz over the entire range of concentrations [9-11].

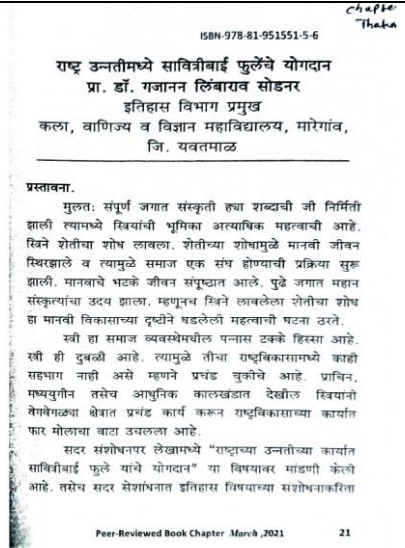
2. Preparation of BN Nanofluids

Boron Nitride is synthesized by using 6.18g boric acid (H_3BO_3 , Merck) dissolved in 200 ml distilled water. The solution is kept at 100°C. The 6.30g melamine $C_3H_3N_3$, Merck is now added to the solution. The material prepared is placed upto 48 hours in room temperature. $B_3N_3O_3H$ is obtained after filtering and drying the solution. This is the precursor of BN. Then it is heated at 500°C temperature for three hours without any gas flow. After that, material heated under nitrogen gas flow. Nitrogen gas flow is allowed for one hour with

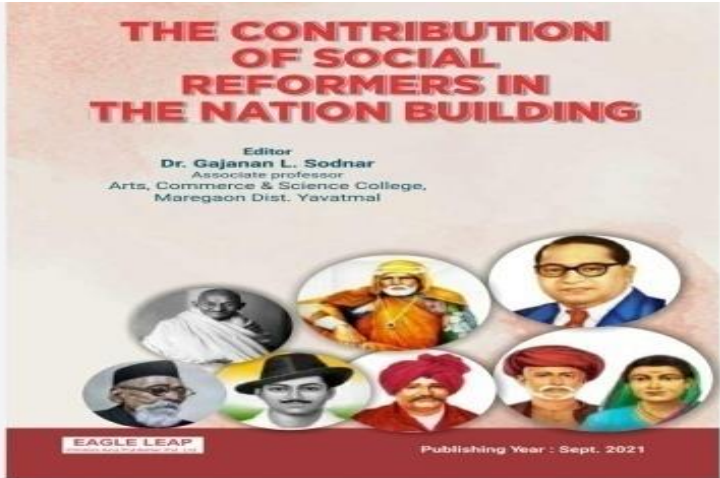
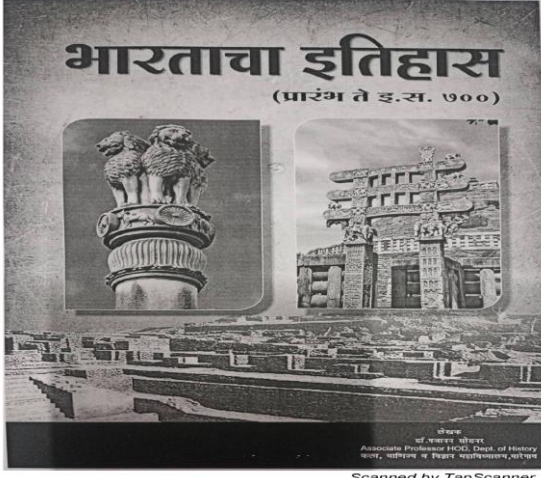
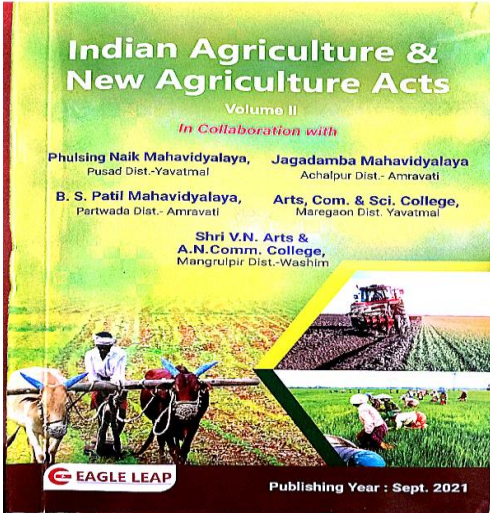
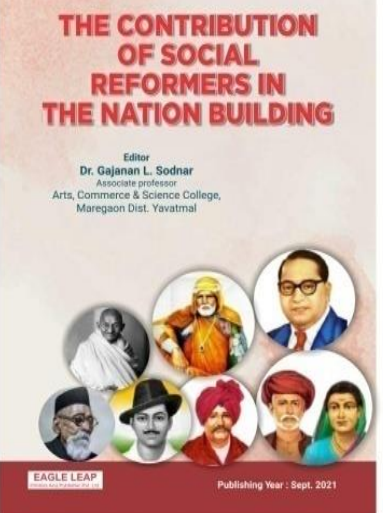
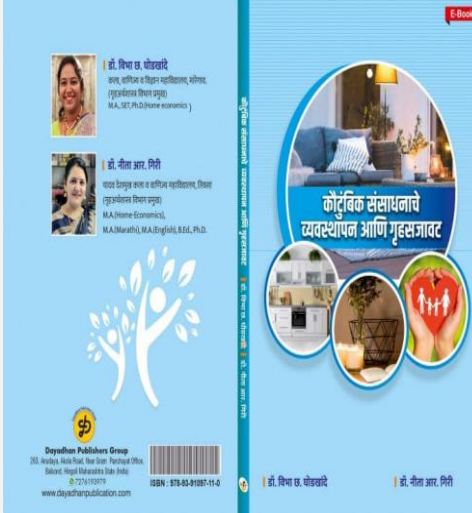
2019-20

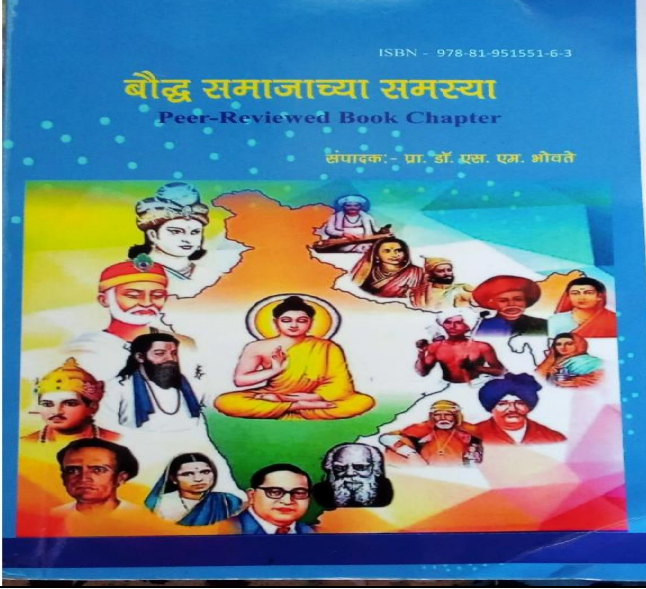
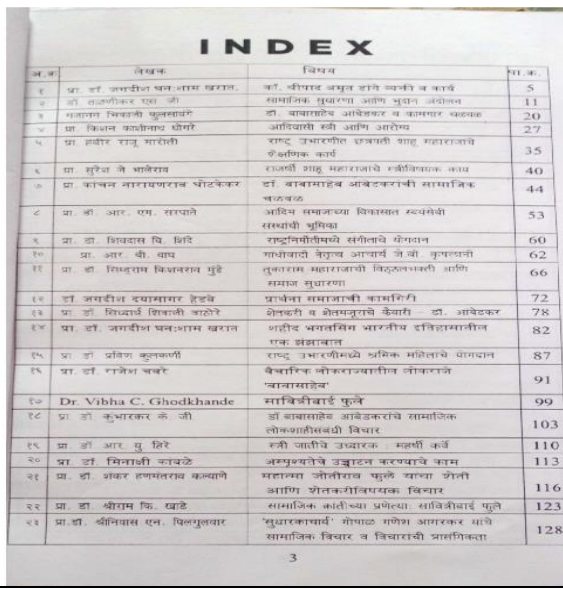
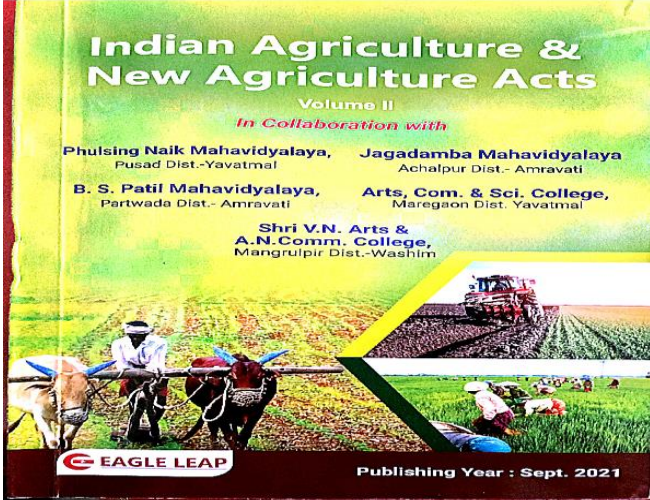
Sr. No.	Name of Author	Screenshot
1.	Prof Dr G L Sodnar	

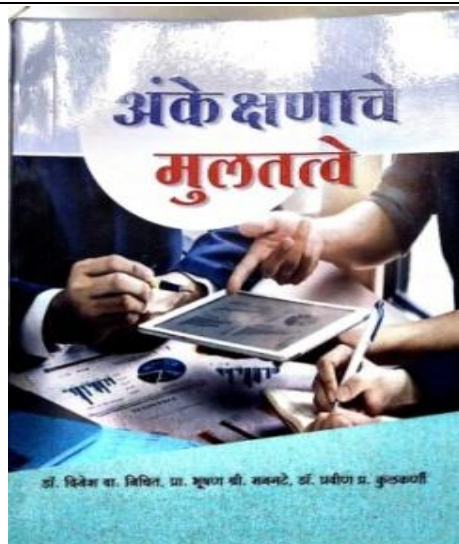
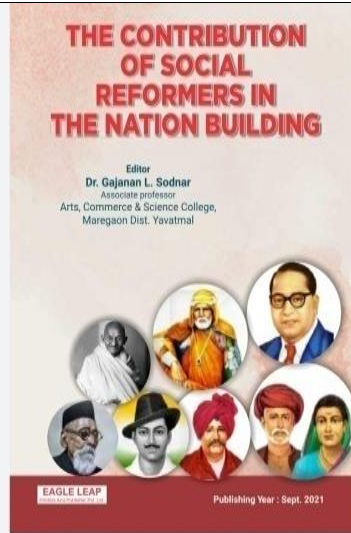
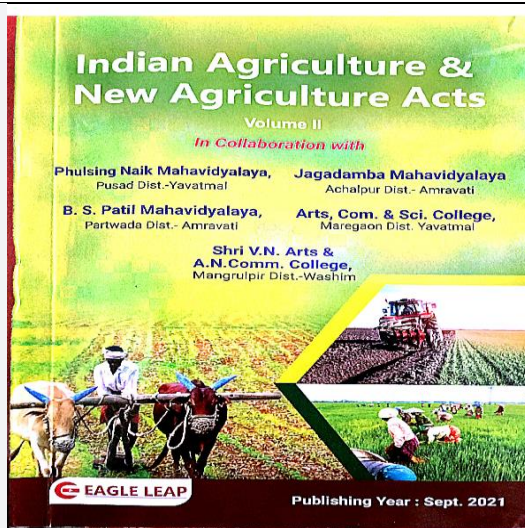
2020-21

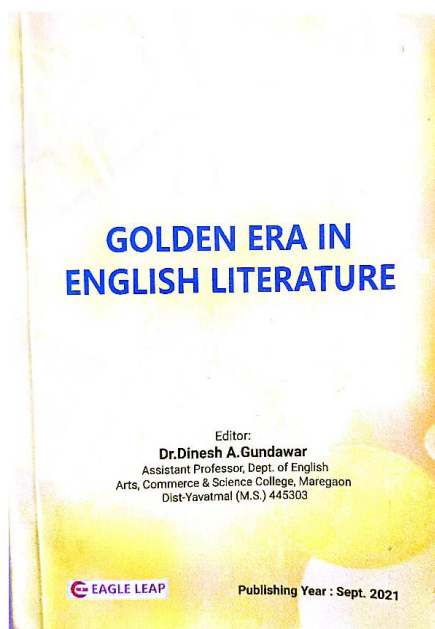
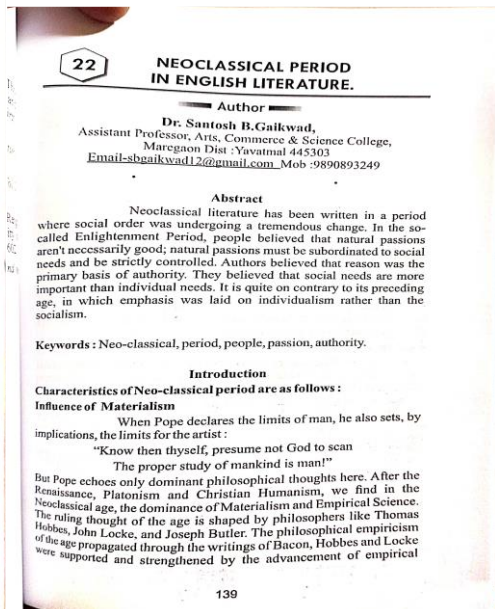
Sr. No.	Name of Author	Screenshot
1.	Prof Dr G L Sodnar	

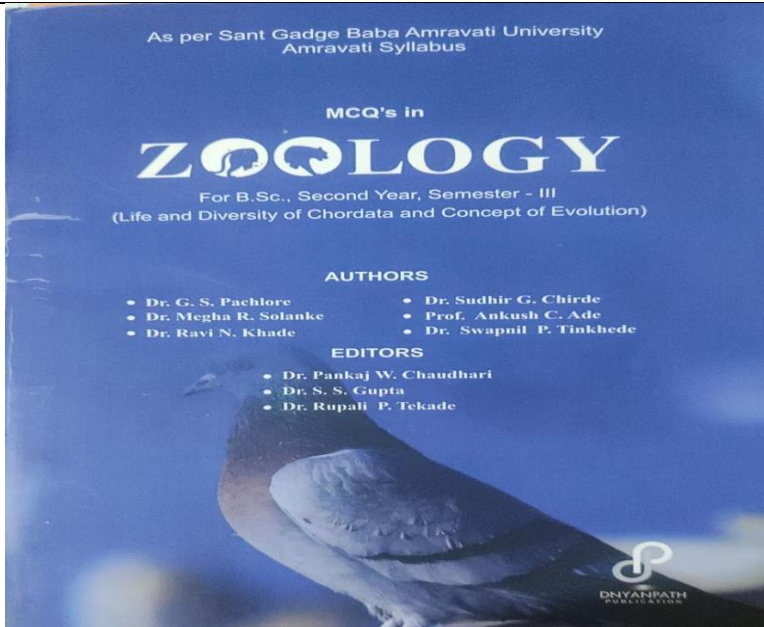
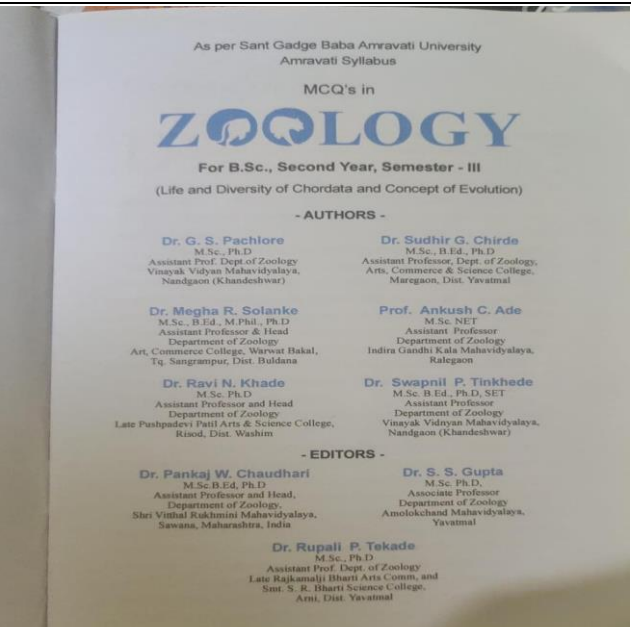
2021-22

Sr. No.	Name of Author	Screenshot
1.	Prof Dr G L Sodnar	 
2.	Dr V C Ghodkhande	  

3.	Dr M M Kamble		
4.	Dr M N Tanurkar		

5.	Dr P P Kulkarni	  
----	-----------------	--

6.	Dr S B Gaikwad	 <table> <tr> <td>12</td><td>ELIZABETHAN LITERATURE : A REVIVAL OF LEARNING.</td><td>Mr. Prashantkumar D. Deshmukh</td><td>73</td></tr> <tr> <td>13</td><td>CONTRIBUTION OF UNIVERSITY WITS TO ENGLISH DRAMA</td><td>Prof. Sarita Uttamrao Chandankar (Chapke)</td><td>80</td></tr> <tr> <td>14</td><td>CHRISTOPHER MARLOWE: THE BLENDING OF RENAISSANCE AND REFORMATION IN HIS PLAYS</td><td>Dr. G. Khamankar</td><td>84</td></tr> <tr> <td>15</td><td>SOCIO - POLITICAL STRUCTURE IN ELIZABETHAN ERA: A REVIEW.</td><td>Dr. Gajanan Sodnar</td><td>92</td></tr> <tr> <td>16</td><td>SIR PHILIP SYDNEY : CRITICAL IDEAS OF RENAISSANCE</td><td>Dr. Pravin Kanake</td><td>98</td></tr> <tr> <td>17</td><td>SOCIO - ECONOMIC CONDITION OF THE ELIZABETHAN AGE.</td><td>Dr. Pravin Kulkarni</td><td>104</td></tr> <tr> <td>18</td><td>RENAISSANCE SPIRIT IN DR. FAUSTUS BY CHRISTOPHER MARLOWE</td><td>Dr. Mohammad Sheikh</td><td>110</td></tr> <tr> <td>19</td><td>ORIGIN AND DEVELOPMENT OF ENGLISH DRAMA.</td><td>Dr. Rajesh Chaware</td><td>119</td></tr> <tr> <td>20</td><td>WILLIAM SHAKESPEARE As A POET</td><td>Dr. Rajeshkumar Soor</td><td>126</td></tr> <tr> <td>21</td><td>PROSE TRANSLATIONS AND PAMPHLETEERING IN ELIZABETHAN ERA</td><td>Dr. Ravi Chapke</td><td>133</td></tr> <tr> <td>22</td><td>NEOCLASSICAL PERIOD IN ENGLISH LITERATURE.</td><td>Dr. Santosh Gaikwad.</td><td>139</td></tr> </table> 	12	ELIZABETHAN LITERATURE : A REVIVAL OF LEARNING.	Mr. Prashantkumar D. Deshmukh	73	13	CONTRIBUTION OF UNIVERSITY WITS TO ENGLISH DRAMA	Prof. Sarita Uttamrao Chandankar (Chapke)	80	14	CHRISTOPHER MARLOWE: THE BLENDING OF RENAISSANCE AND REFORMATION IN HIS PLAYS	Dr. G. Khamankar	84	15	SOCIO - POLITICAL STRUCTURE IN ELIZABETHAN ERA: A REVIEW.	Dr. Gajanan Sodnar	92	16	SIR PHILIP SYDNEY : CRITICAL IDEAS OF RENAISSANCE	Dr. Pravin Kanake	98	17	SOCIO - ECONOMIC CONDITION OF THE ELIZABETHAN AGE.	Dr. Pravin Kulkarni	104	18	RENAISSANCE SPIRIT IN DR. FAUSTUS BY CHRISTOPHER MARLOWE	Dr. Mohammad Sheikh	110	19	ORIGIN AND DEVELOPMENT OF ENGLISH DRAMA.	Dr. Rajesh Chaware	119	20	WILLIAM SHAKESPEARE As A POET	Dr. Rajeshkumar Soor	126	21	PROSE TRANSLATIONS AND PAMPHLETEERING IN ELIZABETHAN ERA	Dr. Ravi Chapke	133	22	NEOCLASSICAL PERIOD IN ENGLISH LITERATURE.	Dr. Santosh Gaikwad.	139
12	ELIZABETHAN LITERATURE : A REVIVAL OF LEARNING.	Mr. Prashantkumar D. Deshmukh	73																																											
13	CONTRIBUTION OF UNIVERSITY WITS TO ENGLISH DRAMA	Prof. Sarita Uttamrao Chandankar (Chapke)	80																																											
14	CHRISTOPHER MARLOWE: THE BLENDING OF RENAISSANCE AND REFORMATION IN HIS PLAYS	Dr. G. Khamankar	84																																											
15	SOCIO - POLITICAL STRUCTURE IN ELIZABETHAN ERA: A REVIEW.	Dr. Gajanan Sodnar	92																																											
16	SIR PHILIP SYDNEY : CRITICAL IDEAS OF RENAISSANCE	Dr. Pravin Kanake	98																																											
17	SOCIO - ECONOMIC CONDITION OF THE ELIZABETHAN AGE.	Dr. Pravin Kulkarni	104																																											
18	RENAISSANCE SPIRIT IN DR. FAUSTUS BY CHRISTOPHER MARLOWE	Dr. Mohammad Sheikh	110																																											
19	ORIGIN AND DEVELOPMENT OF ENGLISH DRAMA.	Dr. Rajesh Chaware	119																																											
20	WILLIAM SHAKESPEARE As A POET	Dr. Rajeshkumar Soor	126																																											
21	PROSE TRANSLATIONS AND PAMPHLETEERING IN ELIZABETHAN ERA	Dr. Ravi Chapke	133																																											
22	NEOCLASSICAL PERIOD IN ENGLISH LITERATURE.	Dr. Santosh Gaikwad.	139																																											

7.	Dr S G Chirde	 
----	---------------	--

Webpage link for supporting documents

Sr. No.	Webpage Link
1.	https://www.acscollegemaregaon.co.in/wp-content/uploads/naac2023/3.3.2.1.pdf

