

Curriculum vitae



Recipient of “Life Time Achievement Award 2021 (ACT,TIFR)”

1. Name : Dr. Swapan K. Saha
2. Department /University/
Position : Former Professor and Emeritus Fellow (UGC)
Department of Chemistry,
University of North Bengal
Darjeeling 734 013, India.
(email: ssahanbu@hotmail.com)
3. Date of birth : January 06, 1951.
4. Research/Teaching Experience : More than 35 years in the University.
5. Post Graduate Degree : M.Sc. (Chemistry), University of North Bengal.
Year: 1972
Specialisation: Physical Chemistry
6. Ph.D. Thesis : Studies on the behaviour of inorganic and
Organic ions towards some polyelectrolytes.
University of North Bengal. Year: 1980.
7. Post Doctoral Research : Spin trapping and ESR spectroscopy of Trapped
Radicals. University of Essex, United Kingdom
Year: 1988-1989.
8. Number of students received Ph.D.degree : 15 (Fifteen)
for research work under direct supervision
9. Other Awards Received:
 - (i) Received **Commonwealth Academic Staff Fellowship Award** to work in UK (PDF).
The award was delivered by commonwealth Commission, London, on recommendation from the UGC, New Delhi. (I was the only candidate who received this award from India in chemistry in the year 1988-89, amongst all the applicants from universities/ research institutes)
 - (ii) Received **Emeritus Fellowship award** in 2016-18 from UGC and ranked 2nd among all successful candidates in the year.

- (iii) Received **Outstanding Reviewer Award** from Elsevier in the year 2015 for peer Reviewing work of research articles. Also adequately honored with certificates to recognize as Reviewer from a number international scientific publishing houses viz., Elsevier, Springer, Wiley-VCH, RSC, Am.Chem.Soc. Taylor & Francis

10. Major Research projects undertaken under financial supports from various agencies:

- (i) Principal investigator of CSIR major research Project entitled “ Polymerisation of water Soluble vinyl monomers on phyllosilicates”
Total fund Rs. 9,00,000/- Duration 1999-2002
- (ii) Principal investigator of CSIR sponsored major research project entitled “Biodegradable thermoplastic starch and Starch linked thermoplastics”
Total fund Rs.9,00,000/- Duration 2003- 2006
- (iii) Program Coordinator of UGC sponsored SAP-DRS program to the Dept. of Chemistry:DRS I
Total Fund Rs. 40,00,000/-
Duration: 2002-2007
- (iv) Program Coordinator of UGC sponsored SAP- DRS program to the Dept. of Chemistry : DRS II
Total Fund Rs. 50,00,000/-
Duration: 2007-2012
- (v) Principal investigator of DST-SERB major Project entitled “Viscoelastic worm-like micelles from cationic surfactants with quaternary ammonium, pyridinium and imidazolium head groups: Thermodynamics, spectroscopy and rheology” Rs. 45,00,000/-

11. Other previous responsibilities : University of North Bengal: Member of the Executive Council, Member of the University Court, Member of the Finance Committee, Coordinator of Special Assistance Program to the Department of Chemistry (SAP, UGC), Director IQAC, Head of the Department of Chemistry. Chairman, Undergraduate Board of Studies in Chemistry.

Previous responsibilities in other University/Institutes: Member, PG Board of Studies in Chemistry of SMIT, Sikkim. Member, Undergraduate Board of Studies in Chemistry of Gourbanga University. Member, Board of Studies in Chemistry, Assam University, Silchar,

12. Countries visited for delivering invited lectures:

Germany, United Kingdom, Japan, Taiwan, Malayasia

13. International/National conferences attended:

More than 50 international/national conferences/seminar/work-shops attended for delivering lectures.

14. List of publications (Selected)

1. Unfolding of Tryptophanoctyl Ester and Elastic Deformation of Host Micelles via $RR'_3N^+\cdots\pi$ Interaction: Conceivable Relevance to Wrapping Process of Receptor Mediated Endocytosis Gulmi Chakraborty, Soumik Bardhan and Swapan K. Saha **ChemPhysChem** doi.org/10.1002/cphc.202100582 (2021) (Chemistry Europe, A forum of sixteen European Chemical Societies), Wiley-VCH
2. Relevance of π -stacking in tuning the neighboring structural pattern of soft nano-aggregates, Gulmi Chakraborty, Soumik Bardhan, Soumen Ghosh and Swapan K. Saha, **Journal of Molecular Liquids** 317 (2020) 114013 (Elsevier)
3. Solution and rheological properties of polyacrylamide in 1,4-dioxane + water mixed solvent media, Bidyut Debnath, Gulmi Chakraborty & Swapan K Saha, **journal of macromolecular science, part a: pure and applied chemistry**, 2020, Vol. 57, No. 9, 628–635. (Taylor & Francis)
4. Interaction of tyrosine analogues with quaternary ammonium head groups at the micelle/water interface and contrasting effect of molecular folding on the hydrophobic outcome and end-cap geometry. Gulmi Chakraborty, Madhurima Paul Chowdhury, P. A. Hassan, Koji Tsuchiya, Kanjiro Torigoe, Swapan K. Saha, **J.Phys.Chem. B**, 2018, 122, 2355-2367. (Am. Chem. Soc.)
5. Polarity tuned unusual six-step self assembly of didodecyldimethyl ammonium bromide in acetonitrile. Madhurima Paul Chowdhury, Gulmi Chakraborty, Soumik Bardhan, Swapan K. Saha, **Chemical Physics Letters**, 2018, 693, 8-15 (Elsevier)

6. Experimental and theoretical efforts to identify the microstructural transition of water to acetonitrile-based reverse micelle through binary compositions of polar solvents. Madhurima Paul Chowdhury, Kaushik Kundu, Soumik Bardhan, Barnali Kar, Gulmi Chakraborty, Swapan K. Saha, **Chemistry Select**, 2017, 2, 9760-9771. (Wiley-VCH)
7. Solvent-induced molecular folding and self-assembled nanostructures of tyrosine and tryptophan analogues in aqueous solution: fascinating morphology of high order. Gulmi Chakraborty, Madhurima Paul Chowdhury, Swapan K. Saha, **Langmuir**, 2017, 33, 6581-6594. (Am. Chem. Soc.)
8. Surface activity and modifying effects of 1-naphthol, 2-naphthol and 2,3-dihydroxynaphthalene on self-assembled nanostructures of 1-hexadecyl-3-methylimidazolium chloride. Gulmi Chakraborty, Madhurima Paul Chowdhury, Soumik Bardhan, Swapan K. Saha, **Colloid Surfaces A.**, 2017, 516, 262-273. (Elsevier)
9. Formation of Oil/Water Interface by Mixed Surface Active Ionic Liquid-Ethoxylated Alkyl Ether: Energetics, Microstructures, Solvation Dynamics, and Antimicrobial Activity. Kaushik Kundu, Soumik Bardhan, Soumen Ghosh, Swapan K. Saha, Bidyut K. Paul, **Chemistry Select**, 2016, 1, 6406-6421. (Wiley-VCH)
10. Unperturbed dimension, interaction parameters, zeta potential and rheology of sodium alginate in binary solvent mixtures. Mrinmay Jha $\pm$, Gulmi Chakraborty $\pm$, Soumik Bardhan, Bidyut Debnath, Swapan K. Saha, **Journal of Polymer Research**, 2016, 23, 162 ($\pm$ Both the authors contributed equally). (Springer)
11. The mixing behaviour of anionic and nonionic surfactant blends in aqueous environment correlates in fatty acid ester medium. Kaushik Kundu, Arindam Das, Soumik Bardhan, Gulmi Chakraborty, Dibendu Ghosh, Barnali Kar, Swapan K. Saha, Sanjib Senapati, Rajib Kumar Mitra, Bidyut K. Paul, **Colloid Surfaces A.**, 2016, 504, 331-342. (Elsevier)

12. Synergistic interactions of surfactant blends in aqueous medium are reciprocated in non-polar medium with improved efficacy as a nanoreactor. Soumik Bardhan, Kaushik Kundu, Barnali Kar, Arindam Das, Gulmi Chakraborty, Dibbendu Ghosh, Debayan Sarkar, Sajal Das, Sanjib Senapati, Swapan K. Saha, Bidyut K. Paul. **RSC Advances**, 2016, 6, 55104-55116. (*Royal Soc. Chem.*)

13. Microemulsion Mediated Organic Synthesis and the Possible Reaction Site. Prasanjit Ghosh, Barnali Kar, Soumik Bardhan, Kaushik Kundu, Swapan Kumar Saha, Bidyut K Paul, Sajal Das. **Journal of Surface Science and Technology**, 2016, 32, 8-16. (*Ind.Soc.Surf.Sci.Tech.*)

14. Unperturbed dimensions and interaction parameters of poly(vinyl alcohol)s in water–acetone and water–tetrahydrofuran mixtures. Mrinmay Jha, Soumik Bardhan, Gulmi Chakraborty, Swapan. K. Saha, **Journal of Polymer Research**, 2015, 22, 164. (*Springer*)

15. The Schulman method of cosurfactant titration of the oil/water interface (dilution method): A review on a well-known powerful technique in interfacial science for characterization of water-in-oil microemulsions, Soumik Bardhan, Kaushik Kundu , Gulmi Chakraborty , Swapan K. Saha*, Bidyut K. Paul*, *J. Surfactants Detergents*, (2005), 18, 547 – 567. (*Springer*)

16. Influence of chemical architecture of oils and ionic liquid on the physicochemical and thermodynamic properties and microenvironment of anionic surfactant based microemulsion, Kaushik Kundu, Soumik Bardhan, Shyamal Banerjee, Gulmi Chakraborty, Swapan K. Saha, Bidyut K. Paul, **Colloids and Surfaces A**, 2015, 469, 117–131 (*Elsevier*)

17. Tuning of physico-chemical characteristics of charged micelles by controlling head group interactions via hydrophobically and sterically

modified counter ions, Subrata Chakrabroty, Amitabha Chakraborty and Swapan K. Saha*, **RSC Adv.**, 2014,4, 32579-32587. (*Royal Soc. Chem.*)

18. Formation, thermodynamic properties, microstructures and antimicrobial activity of mixed cationic/non-ionic surfactant microemulsions with isopropyl myristate as oil, S. Bardhan, K. Kundu, Sajal Das, Madhumita Poddar, S. K. Saha*, B. K. Paul*, **J. Colloid Interface Sc.**, 2014, 430, 129–139. (*Elsevier*)
19. Effect of water content and oil on physicochemical and microenvironmental properties of mixed surfactant microemulsions, S. Bardhan, K. Kundu, S. K. Saha*, B. K. Paul*, **Colloid Surfaces A.**, 2014, 450, 130-140. (*Elsevier*)
20. Physicochemical studies of water-in-oil nonionic microemulsion in presence of benzimidazolebased ionic liquid and probing of microenvironment using model C–C cross coupling (Heck) reaction, B. Kar, S. Bardhan, K. Kundu, S. K. Saha, B. K. Paul, S. Das*, **RSC Adv.**, 2014,4, 21000–21009. (*Royal Soc. Chem.*)
21. Water solubilization, conductivity and structural characteristics of single and mixed surfactant water-in-oil microemulsions in absence and presence of ionic liquids, K. Kundu, S. Bardhan, S. K. Saha*, B. K. Paul*, **Fluid Phase Equilibria**, 2014, 361, 237-249. (*Elsevier*)
22. Physicochemical Investigation of Mixed Surfactant Microemulsion: Water Solubilization, Thermodynamic Properties, Microstructure and Dynamics, S. Bardhan, K. Kundu, S. K. Saha*, B. K. Paul*, **J. Colloid Interface Sc.**, 2013, 411, 152–161. (*Elsevier*)

23. Physicochemical Studies of Mixed Surfactant Microemulsions with Isopropyl Myristate as Oil, S. Bardhan, K. Kundu, B. K. Paul*, S.K. Saha*, ***J. Colloid and Interface Science***, 2013, 402, 180-189.(Elsevier)
24. Interfacial composition and characterization of a quaternary water-in-oil mixed surfactant (cationic of different alkyl chain lengths + polyoxyethylene type nonionic) microemulsions in absence and presence of inorganic salts, S. Bardhan, B. K. Paul*, S. K. Saha*, ***Colloid Surfaces A.*** , 2013, 433, 219-229. (Elsevier)
25. Intermolecular Interaction in 2-Aminopyridine: A Density Functional Study, M. Majumder, T. Goswami, A. Misra*, S. Bardhan, S. K. Saha*, ***Commun. Comput. Chem.*** 2013, 1, 225-234. (Global Sci. Press)
26. Cyclic voltametric investigation of thiazine dyes on modified electrodes. Amitabha Chakraborty, Shamsuzzaman Ahmed, Subrata Pal and Swapan K. Saha*, *ISRN Electrochemistry*, 2013, dx.doi.org/10.1155/2013/959128
27. Effect of Colloidal Silica on the Spectral Behaviour of 7-Hydroxycoumarin in Aqueous Medium. Moumita Chakraborty, Soumik Bandhan, Amiya K. Panda* and Swapan K. Saha* ***Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*** 2012, 97, 722-727. (Elsevier)
28. Effect of solvent characteristics on the photophysics of hydroxyl aromatic compounds. Moazzam Ali, Susanta K. Das and Swapan K. Saha*, ***J. Solution Chemistry*** ,2011, 10, 299-306. (Springer)
29. Molecular interaction of organic dyes in bulk and confined media, Amitabha Chakraborty, Moazzam Ali and Swapan K. Saha*. ***Spectrochimica Acta A.*** 2010, 75, 1577-1583 (Elsevier)

30. Surface and bulk properties of dodecylbenzenesulphonate in aqueous medium: Role of the nature of counter ions. Subrata Chakraborty, Amitabha Chakraborty, **Moazzam Ali, Swapan K. Saha.*** *Journal of Dispersion Science and Technology* 2010, 31, 209-215. ((Taylor & Francis)

31. Electrochemical studies of progressively alkylated thiazine dyes on a glassy carbon electrode (GCE) in water, ethanol, and triton X-100 media, Amitabha Chakraborty, Samsuzzaman Ahmed, and Swapan K. Saha*. **“Sir William A. Wakeham Festschrift” Special issue of J. Chem. Eng. Data** 2010, 55, 1908-1913.(Am. Chem. Soc.)

32. Thermodynamics of micellisation of ammoniumdodecyl sulfate in aqueous solutions of symmetrical tetraalkylammonium bromides: Clouding in presence of tetrabutylammonium bromide salt. Moazzam Ali, Amitabha Chakraborty, Soumik Bardhan and Swapan K. Saha* *Journal of Dispersion Science and Technology*, 2010, 31, 122-129. (Taylor & Francis)

33. Water-soluble co-polymers of acrylamide with N-(1, 1-dimethyl-3-oxybutyl) acrylamide and N-tert-butylacrylamide on aqueous vermiculite microenvironment: Synthesis and Characterisation. Bidyut Debnath, Goutam Bit and Swapan K. Saha*. *Journal of Surface Science and Technology*. 2010, 26, 23-38. (Ind.Soc.Surf.Sci.Tech.)

34. Redox polymerization of acrylamide in aqueous vermiculite clay environment: Kinetics and mechanism. Bidyut Debnath, Goutam Bit and Swapan K. Saha*. *Journal of Surface Science and Technology*. 2010, 26, 39-61. (Ind.Soc.Surf.Sci.Tech.)

35. Solution properties of polymer-nonionic surfactant mixed system,.GoutamBit, Moazzam Ali, Bidyut Debnath and Swapan K. Saha.* *Journal of Dispersion Science and Technology*, 2010, 31, 1-6. (Tailor & Francis)

36. Hydrogen-bond-induced microstructural transition of ionic micelles in the presence of neutral naphthols: pH dependent morphology and location of surface activity. Moazzam Ali, Mrinmoy Jha, Susanta K. Das and Swapan K. Saha.* **J. Phys. Chem. B** 2009, *113*, 15563–15571 (*Am. Chem. Soc.*)

37. Free radical cross-linking copolymerisation of acrylamide and N,N' methylene-bis- acrylamide by using Fe (III)/thiourea and Ce (IV)/ thiourea redox initiator systems. Bidyut Debnath, Goutam Bit and Swapan K. Saha*, **Indian J. Chem. Technol.** 2009, *16*, 196-199. (*C.S.I.R.-NISCAIR*)

38. Micellar shape transition under dilute salt-free conditions: Promotion and self-fluorescence monitoring of stimuli-responsive viscoelasticity by 1- and 2-naphthols. Swapan K. Saha,* Mrinmoy Jha, Moazzam Ali, Amitabha Chakraborty, Goutam Bit, and Susanta K. Das. **J. Phys. Chem. B** 2008, *112*, 4642-4647 (*Am. Chem. Soc.*)

39. Effect of size of tetraalkylammonium counter ions on the temperature dependent micellization of AOT in aqueous medium. Amitava Chakraborty, Subrata Chakraborty and Swapan K. Saha*, **Colloid Polym. Sci.**, 2008, *286*, 927-934. (Springer)

40. Temperature dependent micellization of AOT in aqueous medium: Effect of the nature of counter ions. Amitabha Chakraborty, Subrata Chakraborty and Swapan K. Saha*, **J. Dispersion Sci. Tech.** 2007, *28*, 984-989. (Tailor & Francis)

41. Dilute solution behaviour of progressively hydrolysed polyacrylamide in water-N,N-dimethyl formamide mixtures, G. Bit, B. Debnath and S. K. Saha*, **Eur.Polym.J.**, 2006, *42*, 544-552. (*Elsevier*)

42. Molecular dimension and interaction parameters of polyacrylamide in water-N,N-dimethyl formamide mixtures, G. Bit, B. Debnath and S. K. Saha*, ***J.Macromol.Sci. Part A: Pure and Appl. Chem.***, 2005, 42, 965-976. (Tailor & Francis)

43. Cresyl fast violet in aqueous solution: Temperature dependent unfolding of dimer structure*, ***Z.Phys.Chem.***, 2005, 219, 1373-1384. (Oldenbourg Wissenschaftsverlag, Germany)

44. Polymerization of acrylamide in the layered space of montmorillonite, P. Bera and S. K. Saha*, ***J.Ind.Chem.Soc.***, 2001, 78, 468-476. (Ind.Chem.Soc.)

45. Molecular dimension and interaction parameters of polyacrylamide in water-dimethylsulphoxide mixtures: Effect of temperature, P. Bera and S. K. Saha*, ***Eur.Polym.J.***2001, 37, 2327-2333. (Elsevier)

46. Selective trapping of initiator component in the interlayer space of montmorillonite: A novel technique of controlling linear termination in aqueous acrylamide polymerization, P. Bera and S. K. Saha*, ***Ind.J.Chem.Tech.***, 1999, 6, 24-30.(C.S.I.R.-

47. Water soluble copolymers of acrylamide with diacetone acrylamide and N-t-butyl acrylamide on aqueous montmorillonite surface: Synthesis and characterization, P. Bera and S. K. Saha*, ***Eur.Polym.J.***, 2000, 36, 411-419. (Elsevier)

48. Micellization and gelation of aqueous CTAB and TX-100 in the presence of additives, 1- and 2- naphthols, P. Guha and S. K. Saha*, ***J.Surf.Sci.Tech.***, 1998, 14, 176-183.(Ind.Soc.Surf.Sci.Tech.)

49. Redox polymerization of acrylamide on aqueous montmorillonite surface : Kinetics and mechanism of enhanced chain growth, P. Bera and S. K. Saha*, ***Polymer***, 1998, 39, 1462-1469.(Elsevier)

50. Redox polymerization of acrylamide to high molecular weights: Effect of mineral clay montmorillonite, P. Bera and S. K. Saha*, ***Macromolecular Rapid Communication***, 1997, 18, 261-265.(Huthig & wepf Verlag, zug.)

51. Electrochemical study of the reaction between progressively alkylated thiazine leuco-dyes and Fe(III) on a glassy carbon electrode, S. Ahmed and S. K. Saha*, ***Canadian J.Chem.***,1996, 74,1896-1902.(Chem. Soc. Jpn.)

52. Spin trapping and ESR spectroscopy of propagating vinyl radicals initiated by redox couples involving thiourea, S. K. Saha* and D.J.Greenslade, ***Ind.J.Chem.Tech.***, 1996, 3,201-206. (C,S,I.R.-NISCAIR)

53. Isothiocarbamido radicals from thiourea. Electron spin resonance spectroscopy of α -phenyl-n-t-butyl nitron (PBN) and 5,5 dimethyl 1- pyrroline-n-oxide (DMPO) spin adducts, S. K. Saha* and D. J. Greenslade, ***Bull.Chem.Soc.Jpn.***, 1992, 65, 2720-2723.(Chem. Soc.Jpn)

54. Application of spin trapping technique to redox initiated vinyl polymerization with thiourea as the reductant., S. K. Saha* and D. J. Greenslade, ***J.Polym.Sci.,Polym.Phys.Edn.***, 1992, 30,427-431.(Elsevier)

55. Aqueous polymerization on clay surfaces V. Roll of lattice substituted iron in montmorillonite in polymerizing methyl methacrylate in the presence of

thiourea, J. Bhattacharya, S.C.Guhaniyogi and S. K. Saha*, **J.Polym.Sci., Polym.Chem.Edn.**, 1990, 28, 2249-2254.(Elsevier)

56. Aqueous polymerization on clay surface IV. Effects of hydrogen montmorillonite, monomer concentration and temperature on the polymerization of methyl methacrylate, J. Bhattacharya, S.Talapatre, S.C.Guhaniyogi and S. K. Saha*, **J.Appl.Polym.Sci.**, 1990, 39, 2237-2244. (John Wiley & Sons)
57. Aqueous polymerization on clay surface III. The polymerization of methyl methacrylate by montmorillonite/thiourea initiating system, J. Bhatta- charya, S.K.Chakravarti, S.Talapatra, G.C.Guhaniyogi and S. K. Saha*, **J.Polym.Sci., Polym.Chem.Ed.**, 1989, 27, 3977-3983.(John Wiley & Sons)
58. Effect of organic solvents on dye-DNA interaction, S.K.Saha and S.L.Dutta, **Ind.J.Chem.**, 1986, 25A, 1001-1003.(C.S.I.R.-NISCAIR)
59. Multiple equilibria in humic acid-metal systems: determination of successive stability constants of Cu(II) and Ca-complexes with the aid of ion selective electrodes, S.K.Saha, R.N.Chowdhury and S.K.Chakraborty, **J.Surf.Sci.Tech.** 1985, 1, 63-68.(Ind Soc.Surf.Tech.)
60. Potentiometric investigation on heavy metal-humic acid interaction. Determination of formation constants of Cu(II), Zn(II), Co(II), Ni(II) and Cd(II)-humic acid complexes at pH 4.0, B.Chakraborty, S. K. Saha and S.K.Chakravarti, **J.Ind.Chem.Soc.**, 1984, LXI, 297-301.(Ind. Chem. Soc.)
61. Aqueous polymerization on clay surface I. The polymerization of methyl methacrylate on hydrogen bentonite; Effect of alcohol, S.Talapatra, S.K.Saha,

S.K.Chakravorty and S.C.Guhaniyogi, **Polymer Bulletin**, 1983, 10, 21-27.(
Springer Verlag)

62. Polarographic study of metal-humic acid interactions. Determination of stability constants of Cd- and Zn-humic acid complexes at different pH's. S.K.Saha, S.L.Dutta and S.K.Chakravarti, **Ind.J.Chem.Soc.**, 1979, LVI,(*Ind.Chem.Soc.*) 1129-1134.

CHAPTER IN A BOOK

63. M. Ali and S. K. Saha* (2010) Hydrogen-Bonded Large Molecular Aggregates of Charged Amphiphiles and Unusual Rheology: Photochemistry and Photophysics of Hydroxyaromatic Dopants, in **Hydrogen Bonding and Transfer in the Excited State, Volume I & II** (eds K.-L. Han and G.-J. Zhao), **John Wiley & Sons, Ltd**, Chichester, UK. doi: 10.1002/9780470669143.ch31
64. Soumik Bardhan, Kaushik Kundu, Gulmi Chakraborty, Bidyut K. Paul, Satya P. Moulik, Swapan K. Saha* (2015) Bio-inspired microemulsions and their strategic pharmacological perspectives, in **Encyclopedia of Biocolloid and Biointerface Science** (eds Hiroyuki Ohshima), **John Wiley & Son,s Ltd**.
65. Kaushik Kundu, Bidyut K. Paul, Soumik Bardhan, Swapan K. Saha*, (2015) Recent Advances in *Bio-Ionic Liquids and Biocompatible Ionic Liquid based Microemulsions*, in *Ionic Liquid Based Surfactant Systems : Formulation, Characterization and Applications* (eds Bidyut K. Paul and Satya P. Moulik) **John Wiley & Sons, Ltd**.
66. Swapan K. Saha: **Lecture Notes on Symmetry & Group Theory PART I and II**, For M.Sc./M.Phil Curriculum (Self-Learning Material) pp 1 – 48, Vidyasagar University, W.B.

BOOKS

67. Goutam Bit and Swapan K. Saha* (2010) Synthesis and Solution Properties of Water Soluble Polymers: Synthesis of High Molecular Weight Polyacrylamide in Vermiculite Environment and its Behaviour in Solution: Effect of Surfactant : **VDM Verlag Dr. Müller, Germany. ISBN-10: 3639273532**
68. Amitabha Chakraborty, Swapan K. Saha* (2010) Surfactant Aggregation and Behaviour of Dyes in the Organized Media : **VDM Verlag Dr.Muller, Germany. ISBN: 978-3-639-29499-6**
69. Palas Bera, Goutam Bit, Swapan K Saha* (2011) Polyacrylamide: Clay-catalyzed Synthesis and Its Solution Properties: **VDM Verlag Dr. Mueller e.K., 2011, Germany**
70. Moazzam Ali, Soumik Bardhan and Swapan K. Saha (2022), J. Mol. Liq., 2022, 348, 118455 (Elsevier)
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