

Prof. Rashmi Tyagi

Professor

Education: M.Sc.(Chemistry) & Ph.D. (Chemistry), M. Tech.(Chemical Technology) & Ph.D. (Chemical Technology).

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Areas of Interest: Novel surfactants and oleo-chemicals.

Brief Profile:

Dr. Rashmi Tyagi received M. Sc. & Ph.D. degree in Chemistry from Rohilkhand University, Bareilly in 1990 & 1995, respectively. Further, she received M. Tech. & second Ph.D. degree in Chemical Technology from Harcourt Butler Technological Institute, Kanpur in 2000 & 2005, respectively. She was awarded Senior Research Fellowship of Ministry of Human Resource Development, Govt. of India in Ph.D. (Chem. Tech.) programme. Her areas of research interest are novel surfactants and oleo- chemicals. She has published numerous research papers in peer-reviewed journals. She has also presented many research papers in national & international conferences in India and abroad. She has foreign exposure and visited Canada in May 2007 and USA in May 2009.

Sponsored Research Projects

1. Completed a three years (November 25, 2011- November 24,2015) research project entitled "Development of novel carboxylate anionic gemini surfactants and evaluation of aqueous properties of their binary mixtures with conventional surfactants" sponsored by SERC Fast Track Scheme, Department of Science & Technology (DST), New Delhi, amounting Rs 14.15 lacs.
2. Completed a three years research project entitled "Studies on bis -sulphosuccinate gemini surfactants and evaluation of their surface active properties in mixed surfactant systems" sanctioned by Extramural Research Division of Council of Scientific & Industrial Research (CSIR), New Delhi, amounting Rs 18.00 lacs.

Ph.D. Guided

1. Ms. Parul Tyagi, "Synthesis and Characterization of Anionic Phosphate Gemini Surfactants Based on higher fatty Alcohols", July, 2011.
2. Mr. Naveen Kumar, "Synthesis and Physico-Chemical Properties of Novel Carboxylate Anionic Dimeric Surfactants", October, 2015.
3. Mrs. D. Geetha, "Synthesis, Surface & Physico-Chemical Properties, Micellization and Soil Washing Efficiencies of C12 - C16 Alkyl Polyglucosides (APGs)" in August 2016.
4. Mrs. Vinayika Singh, "Studies on the Spacer Effect on the Surface, Fluorescence and Performance Properties of Synthesized Bis-sulfo Succinate Gemini Surfactants" in June, 2017.

5. Ms. Himani Sharma, "A Comprehensive Study for Biodegradable Sodium γ - Alkyl (C8, C12, and C14) Aspartate and Glutamate based Anionic Surfactants in Aqueous and Salt Medium" in June, 2023.

Books Published

1. "Alkanolamine Based Esterquats: Synthesis, Characterization and properties of their Fabric Softening Formulations", Lambert Academic Publishing, Germany in 2010 (ISBN: 978-3-8433-6862-9).
2. "Anionic phosphate gemini surfactants" Lambert Academic Publishing, Germany in 2011 (ISBN: 978-3-8473-2124-8)

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Published:

1. "Influence of Inorganic and Organic Electrolytes on the Micellization of Synthesized γ -Alkyl (C12 and C14) Aspartate", Journal of Surfactants and Detergents, 25(05), 585-600, 2022. (Co author Himani Sharma)
2. "Mixed micelle properties of anionic dimeric surfactants with anionic, cationic, and nonionic surfactants", "Journal of Surface Science and Technology "DOI. (Co author Naveen Kumar)
3. "Systematic Studies of Sodium γ -Octyl Aspartate to evaluate its Biodegradation, Surface Parameters, Micellization Aspects and Thermodynamic Properties of its Binary Mixture with Inorganic and Organic Salts, Research Journal of Chemistry and Environment , 25(07), 34-48, 2021. (Co author Himani Sharma)
4. Various impacts of COVID-19 on environmental pollution, International Journal of Human Capital in Urban Management, 06(01), 01-10, 2021. (Co author Naveen Kumar)
5. "Efficiency of single and mixed dimeric surfactants micelle on solubilization of polycyclic aromatic hydrocarbon," Applied Chemical Engineering,02(01), 01-06, 2019. (Co author Naveen Kumar)
6. "SAFER SURFACTANTS, BASED ON AMINO ACIDS FOR CLEANER ENVIRONMENT: A REVIEW, Journal of Biochemistry International, 05(02), 28-56, 2018. (Co author Himani Sharma)
7. "Characteristic and Application of Anionic Dimeric Surfactants: A Review," Tenside Surfactants Detergents, 56(03), 172-179, 2019. (Co author Naveen Kumar)
8. "Physico-chemical properties and effect of organic and inorganic electrolytes on surface properties of C12 and C16 alcohol based bis-sulfosuccinate anionic gemini surfactants," Colloid and Polymer Science, 295 (04), 601-611, 2017. (Co author Vinayika Singh)

9. "Steady-state Fluorescence Investigations of Aqueous Binary Mixtures of Myristyl Alcohol based Bis-sulfosuccinate Anionic Gemini Surfactant and Effect of Different Conventional Surfactants Therein," Journal of Dispersion Science & Technology, 38(02), 265-271, 2017. (Co author Vinayika Singh)
10. "Consumer Behavior and Fascinating Challenges on Household Laundry & Dish washing," Tenside Surfactants Detergents, 53(06), 568-575, 2016. (Co Author D.Geetha)
11. "Surface and Aggregation Properties of Synthesized Cetyl Alcohol Based Bis-Sulfosuccinate Gemini Surfactants in Aqueous Solution," Journal of Surfactants and Detergents, 19(01), 111-118, 2016. (Co author Vinayika Singh)
12. "Micellization and effect of salt behavior on meristyl alcohol based bis-sulfosuccinate gemini surfactants in aqueous solutions," Journal of Dispersion Science & Technology, 37(10), 1460-1469, 2016. (Co author Vinayika Singh)
13. "Synergistic Interactions in the Mixed Micelles of Cationic Amphiphile with Biopolymeric Glucoside Surfactants", Journal of Dispersion Science & Technology, 37 (08), 1089-1096, 2016. (Co Author D.Geetha)
14. "Surface and Fluorescence Studies of Bis-Sulfosuccinate Anionic Gemini Surfactants Derived from Dodecanol Using Different Flexible Methylene Chains as Spacers," Tenside Surfactants Detergents, 52(04), 01-08, 2015. (Co author Vinayika Singh)
15. "Analysis of the interactions of polyvinylpyrrolidone with conventional anionic and dimeric anionic surfactants", Journal of Dispersion Science & Technology, 36(11), 1601-1606, 2015. (Co Author Naveen Kumar)
16. "Unique Micellization and CMC Aspects of Gemini Surfactant: An Overview, Journal of Dispersion Science & Technology", 35(12), 1774-1794, 2014. (Co author Vinayika Singh)
17. "Industrial Applications of Dimeric Surfactants: A Review", Journal of Dispersion Science & Technology, 35(02), 205-214, 2014. (Co Author Naveen Kumar)
18. "Removal of Residual Surfactants from Laundry Waste Water: A Review," Journal of Dispersion Science & Technology, 34(11), 1526-1534, 2013.(Co Author Sandeep Kumar Tripathi & Barun Kumar Nandi)
19. "Alkyl Poly Glucoside (APGs) Surfactants: A Review," Tenside Surfactants Detergents, 49(05), 417-427, 2012. (Co Author D.Geetha)
20. "Synthesis and physico-chemical properties of novel dialkyl diphosphate gemini surfactants based on octadecanol", European Journal of Lipid Science and Technology, 113 (07), 848-855, 2011. (Co author Parul Tyagi)

21. "Synthesis of bisphosphodiester surfactants derived from tetradecanol and different methylene chains as a spacer derived from α - ω - alkyl dibromides", Tenside Surfactants Detergents, 48 (04), 293-299, 2011. (Co author Parul Tyagi)
22. "Synthesis and properties of Di - n hexadecyl- α - ω - Alkyl bisphosphate surfactants," Tenside Surfactants Detergents, 47 (04), 1-6, 2010. (Co author Parul Tyagi)
23. "Synthesis, Structural properties and Applications of Gemini Surfactants: A Review", Tenside Surfactants Detergents, 46(06), 373-382, 2009. (Co author Parul Tyagi)
24. "Imidazoline and its derivatives: An overview," J. Oleo Science (Japan), 56(05), 211-222, 2007.(Co author S.K.Pandey)
25. "Ability of Sugar Based Glucoside Surfactants for Removal of Petroleum Contaminants", Journal of Surface Science and Technology, 31(03-04), 157-164, 2015.(co authors Geetha Dass & Naveen Kumar)
26. "Synthesis and Surface Studies of Anionic Gemini Surfactant in the Different Counter-ions", International Journal of Industrial Chemistry 06(01), 59-66, 2015. (Co Author Naveen Kumar)
27. "SAFER SURFACTANTS, BASED ON AMINO ACIDS FOR CLEANER ENVIRONMENT: A REVIEW, Journal of Biochemistry International, 5(2): 28-56, 2018. (Co author Himani Sharma).
28. "Efficiency of single and mixed dimeric surfactants micelle on solubilization of polycyclic aromatic hydrocarbon", Applied Chemical Engineering, 02:2018. doi: 10.63019/ace.v1i2.545. (Co Author Naveen Kumar)
29. "Fluorescence properties of surfactant molecules: A review" JUET Research Journal of Science and Technology, 03(02), 211-219, 2016. (Co author Vinayika Singh)
30. "Investigation of mixed surfactant systems of lauryl alcohol based bisulfosuccinate anionic gemini surfactant with conventional surfactants: A fluorometric study", Journal of Taibah University for Science, 09(04), 477-489, 2015. (Co author Vinayika Singh)
31. "Synthesis of anionic carboxylate dimeric surfactant and their interactions with electrolyte," Journal of Taibah University for Science, 09(01), 69-74, 2015. (Co Author Naveen Kumar)
32. "Synthesis and Mixed Micellization Studies of Glucoside Surfactants with Cationic Amphiphiles", Journal of Biochemistry International, 02(03), 96-104, 2015. (Co author D.Geetha)
33. "Surface and dispersion properties of dodecanol and tetradecanol based glucoside surfactants" International Journal of Scientific & Engineering Research, 05(04), 1278-1283, 2014. (Co author D.Geetha)

34. "Dimeric Surfactants: a Promising Ingredients for Cosmetics and Toiletries, Cosmetics, 01(03), 3-13, 2013. (Co Author Naveen Kumar)
35. "Sulphited oil based fat liquors for leather processing", J. Indian Leather Technologists Association, 58, 491-499, 2008.(Co author S.K. Mishra) Presented
36. "An Informative Study on γ -dodecyl Aspartate to Illustrate Its Synthesis, Biodegradation, Interfacial Phenomena, Thermodynamic Characteristic and Micellization Scenario" presented at 35th M.P. Young Scientist Congress, Indore, held during February 28-29, 2020. (Co author Himani Sharma)
37. "Laundry Detergents and Their Environmental Impact," in National symposium on "Green Chemistry & Technology for Sustainable Development (NSGC 2019)" organized by G H Patel College of Engineering & Technology Vallabh Vidhyanagar, Gujarat held on January 18-19, 2019. (Co author Himani Sharma)
38. "Micellization investigation of meristyl alcohol based bis-sulfosuccinate gemini surfactants with anionic, nonionic and conventional surfactants," International Journal of Analytical and Applied Chemistry Vol. 2, issue 1, 01-08(2016){Paper presented in International Conference on "Recent Advances in material and Chemical Sciences (ICRAMCS-2016)", organized by Department of Chemistry at Bundelkhand University, on March 02-05, 2016 at Jhansi (U.P.). (Co author Vinayika Singh)
39. "Determination of mixed micellization properties of" Bis-sulfosuccinate gemini and sodium dodecyl sulphate using steady-state fluorescence quenching", Journal of Basic and Applied Engineering Research, vol. 2, No. 13, 1086-1090,(2015). {Paper presented in 5th International conference on "Recent Trend in Applied Physical, Chemical Sciences, Mathematical /Statistical and Environmental Dynamics", organized by Krishi Sanskriti on May 02-03, 2015, at Jawaharlal Nehru University, New Delhi.} (Co author Vinayika Singh)
40. "Solubilization abilities of single and mixed dimeric surfactants towards polycyclic hydrocarbons," at National conference on 'Newer Oleo-chemicals: Production and Industrial Applications' organized by "Center of Excellence on Applied Research, Training and Education in Lipid Science" established in the Department of Oil and Paint Technology, HBTI, Kanpur under TEQIP-II World Bank Project, held during on January 10-11, 2015. (Co Author Naveen Kumar)
41. "Studies on synthesized C16 &C18 polyglucosides for emulsion stability and HLB value," at National conference on 'Newer Oleo-chemicals: Production and Industrial Applications' organized by "Center of Excellence on "Applied Research, Training and Education in Lipid Science" established in the Department of Oil and Paint Technology, HBTI, Kanpur under TEQIP-II World Bank Project, held during on January 10-11, 2015. (Co Author Geetha D)
42. "Fluorescence studies on binary mixtures of bis -sulfosuccinate anionic surfactants with conventional anionic (SDS) and nonionic (Triton-X 100) surfactants", at National conference on 'Newer Oleo-chemicals: Production and Industrial Applications' organized by -Center of Excellence on -Applied Research, Training and Education in Lipid Science- established in the

Department of Oil and Paint Technology , HBTI, Kanpur under TEQIP-II World Bank Project, held during on January 10-11, 2015. (Co author Vinayika Singh)

43. "Turbidity Studies on the Mixed Surfactants System in Hard Water for Hardness Estimation by Synthesized Sugar Based Alkyl Polyglucoside Surfactants," 69th Annual Convention of Oil Technologists Association of India and International Conference on Sustainable Technologies and Futuristic Trends: Oilseeds- Oils Processing and Surfactants & Expo 2014" held at Agra, on November 14-16, 2014. (Co-Author Geetha D)

44. "Surface Studies of Dimeric Surfactants in the Presence of Different Sodium Salts," "69th Annual Convention of Oil Technologists Association of India and International Conference on Sustainable Technologies and Futuristic Trends: Oilseeds- Oils Processing and Surfactants & Expo 2014" held at Agra, on November 14-16, 2014. (Co Author Naveen Kumar)

45. "Amino acid-based dimeric surfactants: A new era of surfactants" International Conference on Global Opportunities for Latest Developments in Chemistry and Technology (GOLD-CT-2014), North Maharashtra University, Jalgaon (Maharashtra) held during February 06-08, 2014. (Co Author Naveen Kumar)

46. "Derivatives of sugar based Alkyl polyglucoside surfactants," International Conference on Global Opportunities for Latest Developments in Chemistry and Technology (GOLD-CT-2014), North Maharashtra University, Jalgaon (Maharashtra) held during February 06-08, 2014. (Co Author Geetha D)

47. "A Study of Cost Effective Detergents on the Basis of Anionic Active Matter & Critical Micelle Concentration," National Conference entitled, "Recent Advances in Materials Science & Engineering: A Multidisciplinary Approach (RAMSE 2010)" JUET, Guna (M.P.) held during October 23-24, 2010. (Co Author Parul Tyagi)

48. "Effect of Spacers on Yield, Surface Activities and performance on properties of Anionic Gemini Surfactants," National Conference entitled, "Recent Advances in Materials Science & Engineering: A Multidisciplinary Approach (RAMSE 2010)" JUET, Guna (M.P.) held during October 23-24, 2010. (Co Author Parul Tyagi)

49. "Brownfield: A Threat to Sustainable Development," National Conference entitled, "Recent Advances in Materials Science & Engineering: A Multidisciplinary Approach (RAMSE 2010)" JUET, Guna (M.P.) held during October 23-24, 2010. (Co Author Shubham Dixit, Apoorva Kumar)

50. "A Study on Effect of Flexible Spacers on Hexadecanol based Gemini Surfactants," National Conference entitled, "Recent Innovations in Oil and Food Technology" (RIOFT-2010) at North Maharashtra University, Jalgaon, Maharashtra held during August 23, 2010. (Co Author Parul Tyagi)

51. "Dynamic Study on Dialkyl Diphosphate Gemini Surfactants Based on Octadecanol," National Conference entitled, "National conference on Simulation and Characterization of

Advanced Materials (SICHAM-2010) at Mahatma Jyotiba Phule Rohilkhand University, Bareilly (U.P) held during April 17-18, 2010. (Co Author Parul Tyagi)

52. "Novel Gemini Surfactants based on Myristyl Alcohol" National Conference entitled, "National conference on Emerging Trends in Chemical Sciences (NCETC) at Bundelkhand University, Jhansi (U.P.) held during February 24-26, 2010. (Co Author Parul Tyagi)

53. "Synthesis, Characterization and properties of Anionic Gemini Surfactants having Different Spacer Groups," International Conference entitled 100th AOCS annual meeting and expo held at Orlando, Florida, USA held during May 3-6, 2009. (Co Author Parul Tyagi).

54. "Properties of oleic acid-based esterquats synthesized by using different alkanolamine," International Conference entitled 98th AOCS annual meeting and expo held at Quebec City Q.C., Canada held during May 3-6, 2007.