

CURRICULUM-VITAE

Ketan C. Kuperkar

Current Position Assistant Professor.
Address (O) Department of Applied Chemistry, Sardar Vallabhbhai National Institute of Technology (SVNIT), Dumas Road, Ichchhanath, Surat-395007, GUJARAT (INDIA).
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Qualifying Degree Ph.D. (Physical Chemistry)

A. Research field(s) of Interest:

Surfactant Science, Polymers, Colloids, Materials Chemistry, Soft Condensed Matter, Corrosion, Waste water treatment, Computational simulation, Drug delivery and Biochemistry.

B. Project Details:

1. **Aggregation of amphiphilic copolymers in deep eutectic solvent-water mixed systems** (CRS-M-234) sponsored by Collaborative Research Scheme of University Grants Commission-Department of Atomic Energy, INDIA. Ref. UDCSR/MUM/CRS-M-234/2017/1002.

C. Fellowships/Awards:

1. Postdoctoral Research Fellowship awarded by High Energy Accelerator Research Organization (KEK), J-PARC, JAPAN under the project entitled "**Hierarchical structure of soft matter induced by addition of charges**" of Dr. Hideki Seto. (01/05/2012 to 30/06/2013).
2. Research Associateship awarded by Board of Research in Nuclear Sciences (BRNS), BARC - Mumbai under the scheme 2010/37C/31/BRNS and project entitled "**Oil Solubilization in Block Copolymeric Micelles**" of Dr. P. Bahadur. (05/03/2011 to 21/04/2012).
3. Ph.D. (Physical Chemistry) awarded on the title "**Molecular interactions of Surfactant in aqueous solutions**" under the supervision of Professor P. Bahadur, Department of Chemistry, Veer Narmad South Gujarat University, Surat in July 2010.
4. Direct Senior Research Fellowship awarded by Council for Scientific and Industrial Research (CSIR), Govt. of India, New Delhi under the scheme 09/1008/ (0001)/2010/EMR-I and project entitled "**Salt induced micellar transitions in aqueous solution of Cationic Surfactants**" (01/04/2010 to 22/7/2010).
5. Senior Research Fellowship awarded by Council for Scientific and Industrial Research (CSIR), Govt. of India, New Delhi under the scheme 01(2068)/06/EMR-II and project entitled "**Interaction of Surfactants in Mixed Micelle: Effect of various Additives, Chain Length, pH and Micelle Charge Density**" of Dr. P. Bahadur. (06/05/2008 to 31/12/2009).

D. List of Publications:

1. Controlled morphology in calcium carbonate using surface-active ionic liquids (SAILs) as a template, C. Patel, D. Patel, M. B. Shirdhonkar, K. Kuperkar (*Accepted*).
2. Biototoxicity assessment and tissue-specific oxidative stress induced by Gemini surfactant as a protocol on *Cirrhinus mrigala* (Ham.): An integrated experimental and theoretical methodology, U. Dani, A. Bahadur, K. Kuperkar, *Ecotoxicology and Environmental Safety* 183 (2019) 109478-86.
3. A comprehensive insight on H-type aggregation in Congo red-surfactant systems revealed through physico-chemical studies integrated with simulation framework, V. Kumar, D. Patel, H. Pal, K. Kuperkar *Phy. Chem. Chem. Phys.* 21(2019) 15584-15594.
4. A new insight into non-steroidal anti-inflammatory drugs (NSAIDs) as modulated green inhibitory agent in mild steel corrosion, D. Patel, K. Makhwana, M. B. Shirdhonkar, K. Kuperkar *Chemistry Select* 4 (2019) 5799-5809.
5. Unraveling the Solubilization and Cytotoxicity study of poorly water-soluble anti-inflammatory drug in aqueous Gemini Surfactants solution with Physico-chemical characterization and simulation study, B. Kanoje, D. Patel, V. Kumar, J. Parikh, K. Kuperkar *Colloids and Surfaces B: Biointerfaces* 179 (2019) 437-444.
6. New insight into Experimental and Computational studies of Choline Chloride-based 'green' Ternary Deep Eutectic Solvent (TDES), A. Jangir, D. Patel, R. More, A. Parmar, K. Kuperkar *J. Mol. Struct.* 1181 (2019) 295-299.
7. Enhancement of physico-chemical and anti-corrosive properties of tung oil based polyurethane coating via modification using anhydrides and inorganic acid. A. Shirke, B. Dholakiya, K. Kuperkar, *Surfaces and Interfaces* 15 (2019) 180-190.
8. Micellar transition (ellipsoidal to ULV) induced in aqueous Gemini surfactant (12-2-12) solution as a function of additive concentration and temperature using experimental and theoretical study B. Kanoje, A. Jangir, D. Patel, D. Ray, V. Aswal, H. Pal, J. Parikh, K. Kuperkar, *Colloids Surfaces A.* 555 (2018) 227-236.
9. Micellization, antimicrobial activity and curcumin solubilization in Gemini surfactants: Influence of spacer and non-polar tail. U. Dani, A. Bahadur, K. Kuperkar, *Colloids Interf. Sci. Commun.* 25 (2018) 22-30.
10. Electrokinetic potential, thermal and microscopic investigation of surfactant-polymer templates on precipitated calcium carbonate morphology with dynamic simulation. D. Patel, K. Kuperkar, *Chemistry Select* 3 (2018) 4382-4386.
11. Crystallization study and morphology behavior of calcium carbonate crystals in aqueous Surfactant-Pluronic[®] prototype, B. Kanoje, K. Kuperkar, *J. Mater. Res. Technol.* 7(4) (2018) 508-514.
12. Modification of Tung oil based polyurethane foam by anhydrides and inorganic content through esterification process. A. Shirke, B. Dholakiya, K. Kuperkar, *J. App. Polym. Sci.* 135 (5) (2018) 45786-45796.
13. Kinetics and thermodynamics of hazardous dye sorption from waste water using anionic surfactant as counter ion physically impregnated in polyurethane foam. A. Shirke, P. Parekh, B. Dholakiya, K. Kuperkar. *J. Surfact. Deterg.* 21 (2) (2018) 187-196.
14. Synergism and aggregation behavior in aqueous binary mixture of cationic-zwitterionic surfactants: Physico-chemical characterization with molecular simulation approach. B. Kanoje, S. Padshala, J. Parikh, S. Sahoo, K. Kuperkar, P. Bahadur, *Phy. Chem. Chem. Phys.* 20 (2018) 670-681.

15. Morphology modification in freshly precipitated Calcium Carbonate particles using polymer-surfactant template, B. Kanoje, D. Patel, K. Kuperkar. *Materials Letters* 187 (2017) 44-48.
16. Mixed micellization study of alkyltrimethylammonium and alkyltriphenylphosphonium bromides in aqueous solution, S. Padasala, B. Kanoje, K. Kuperkar, P. Bahadur. *J. Surfact. Deterg.* 19(2) (2016) 389-398.
17. Solubilization study of water-insoluble dye in cationic single/dimeric surfactant micelles: Effect of headgroup, nonpolar tail, spacer chain in aqueous and salt solution, S. Padasala, K. Kuperkar, P. Bahadur. *Coloration Technology* 132(3) (2016) 217-221.
18. Tung Oil based polyurethanes: A short review, A. Shirke, P. Bhikhadiya, B. Dholakiya, K. Kuperkar, *J. Polymer and Composites* 3(3) (2015) 1-6.
19. Novel applications of Castor oil based Polyurethanes: A short review, A. Shirke, B. Dholakiya, K. Kuperkar, *Polymer Science* 57(4) (2015) 292-297.
20. PEO-PPO based star-block copolymer T904 as pH responsive nanocarriers for quercetin: Solubilization and release study, A. Parmar, A. Bahadur, K. Kuperkar, P. Bahadur. *European Polymer Journal* 49(1) (2013) 12-21.
21. Phenol solubilization in the Aqueous Pluronic® Solutions: Investigating the Micellar Growth and Interaction as a Function of Pluronic® Composition, R. Ganguly, K. Kuperkar, P. Parekh, V.K. Aswal and P. Bahadur. *J. Colloid Interface Sci.* 378 (2012) 118–124.
22. Spectral and Scattering Microstructural Investigation in Cationic Gemini Surfactants (12-s-12) induced by p-toluidine. N. Dharaiya, A. Patriati, K. Kuperkar, E. G. R. Putra, P. Bahadur. *Colloids Surfaces A* 396 (2012) 1-7.
23. Microstructural Study of CTAB/1-Butanol/Salt/Water System: SANS and 2D-NOESY Analysis. K. Kuperkar, A. Patriati, E.G.R. Putra, D.G. Marangoni, P. Bahadur. *Can. J. Chem.* 90(3) (2012) 314-320.
24. Surface-Active Properties and Antimicrobial Study of Conventional Cationic and Synthesized Symmetrical Gemini Surfactants. K. Kuperkar, J. Modi, K. Patel. *J. Surfact. Deterg.* 15(1) (2012) 107-115.
25. Formation and growth of Gemini surfactant (12-s-12) micelles as modulate by spacers: A thermodynamic and small-angle neutron scattering (SANS) study. S. Chavda, K. Kuperkar, P. Bahadur. *J. Chem. Engg. Data.* 56 (5) (2011) 2647–2654.
26. Effect of n-alkanols/salt on the Cationic Surfactant Micellar System in their Aqueous Solutions – A Dynamic Light Scattering Study. K. Kuperkar, J. Mata, P. Bahadur. *Colloids Surfaces A* 380 (2011) 60-65.
27. Formation and Growth of Micelles in Dilute Aqueous CTAB Solutions in the presence of NaNO₃ and NaClO₃. K. Kuperkar, L. Abezgauz, K. Prasad, P. Bahadur. *J. Surfact. Deterg.* 13(3) (2010) 293-303.
28. Effect of Counterions on Micellization and Micellar Growth in Aqueous Cetyl pyridinium chloride solutions. L. Abezgauz, K. Kuperkar, P. A. Hassan, O. Ramon, P. Bahadur, D. Danino. *J. Colloid Interface Sci.* 342 (2010) 83-92.
29. Structural Investigation of Viscoelastic Micellar Water/CTAB/NaNO₃ Solution. K. Kuperkar, L. Abezgauz, D. Danino, G. Verma, P. A. Hassan, V. K. Aswal, D. Varade, P. Bahadur. *Pramana - J. Phys.* 71(5) (2008) 1-8.
30. Viscoelastic Micellar Water/CTAB/NaNO₃ Solutions: Rheology, SANS and CryoTEM Analysis. K. Kuperkar, L. Abezgauz, D. Danino, G. Verma, P. A. Hassan, V. K. Aswal, D. Varade, P. Bahadur. *J. Colloid Interface Sci.* 323 (2008) 403-409.
31. Micellization and Interaction Properties of Aqueous Solutions of Mixed Cationic & Nonionic Surfactants. T. Joshi, B. Bharatiya, K. Kuperkar. *J. Disp. Sci. Tech.* 29 (2008) 3-9.

E. Invited / Expert Talk / Oral / Poster presentation at National/International Conferences:

1. Invited talk at Science Academics' Refresher Course on Elementary Quantum Mechanics and Spectroscopy on 24th January 2019 sponsored by IAS, Bangalore, INSA, New Delhi, NASc, Allahabad at Dept. of Applied Physics, SVNIT, Surat, INDIA.
2. Presented poster at International workshop: Polyelectrolytes in Chemistry, Biology and Technology during 12-14 March 2018 at Nanyang Technological University, SINGAPORE.
3. Invited talk at Nanostructured Materials in Polymers and Pharmaceutical Sciences (PolyTech-2017) during December 19-20, 2017 in Pune, INDIA.
4. Invited talk at 7th Asian Conference on Colloids and Interface Science (ACCIS 2017) during August 8-11, 2017 in Kuala Lumpur, MALAYSIA.
5. Invited talks at Mahidol University on 31st July 2017 and 2nd International Conference on Advanced Materials Research and Manufacturing Technologies (AMRMT 2017) during August 2-5, 2017 in Phuket, THAILAND.
6. Invited talk at 2016 Global Research Efforts on Energy and Nanomaterials (GREEN 2016) presented by Asia Pacific Society for Materials Research (APSMR) during December 22-25, 2016, TAIWAN.
7. A Short Term Training Programme on "Particle Technology: Characterization and Modeling of Particulate Materials (PT-CMPT-2016)" at Chemical Engineering Department, Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat-395007, GUJARAT (INDIA). 1st – 5th August 2016, INDIA.
8. A Short Term Training Programme on "Sophisticated Analytical Techniques in Surface Chemistry (SATSC-2016)" at Applied Chemistry Department, Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat-395007, GUJARAT (INDIA). 19th – 23rd September 2016, INDIA.
9. A Short Term Training Programme on "Recent Trends in Applied Chemical science and Technology (RTACST-2016)" at Applied Chemistry Department, Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat-395007, GUJARAT (INDIA). 17th – 21st October 2016, INDIA.

F. Conference / Training / Symposium / School / Workshop attended:

1. A Short Term Training Programme on "Particle Technology: Characterization and Modeling of Particulate Materials (PT-CMPT-2016)" at Chemical Engineering Department, Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat-395007, GUJARAT (INDIA). 1st – 5th August 2016.
2. A Short Term Training Programme on "Sophisticated Analytical Techniques in Surface Chemistry (SATSC-2016)" at Applied Chemistry Department, Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat-395007, GUJARAT (INDIA). 19th – 23rd September 2016.
3. A Short Term Training Programme on "Recent Trends in Applied Chemical science and Technology (RTACST-2016)" at Applied Chemistry Department, Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat-395007, GUJARAT (INDIA). 17th – 21nd October 2016.
4. 2 day Course and Workshop on "Materials Design using Computational Tools (MDCT-2016)" organized by Applied Chemistry Department, Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat-395007, GUJARAT (INDIA). 12th – 13th December 2016.

G. Conference/Training Program/Symposium/School/Workshop organized:

1. Organized a Short Term Training Programme on “Advanced Analytical Techniques for Materials Characterization (AATMC-2015)” at Applied Chemistry Department, Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat-395007, GUJARAT (INDIA). 23rd–28th February 2015.
2. Organized a Short Term Training Programme on “Sophisticated Analytical Techniques in Surface Chemistry (SATSC-2016)” at Applied Chemistry Department, Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat-395007, GUJARAT (INDIA). 19th–23rd September 2016.

H. Memberships:

1. Member of Asian Society for Colloid and Surface Science (ASCASS).
2. Life Member of Society for Industrial Chemistry (SIC), Mumbai, INDIA.
3. Life Member of Indian Society for Surfactant Science and Technology (ISSST), Kolkata, INDIA.

I. Books / Book Chapter / Reviews written:

1. Gemini Surfactant as Metal Corrosion Inhibitors - A Review, **K. Kuperkar**, (*Published in Household Products and Cleaning – Today, UK, 2011*).
2. A Classical Mathematical solution for surfactant induced flow behavior through porous media, R. Kuperkar, **K. Kuperkar**, (*Published in Household Products and Cleaning – Today, UK, 2013*).

J. Research students (Ph.D.)

No.	Year	Student Name	Title
1	Dec. 2018	Divya K. Patel (DS18CY002)	Coursework
2	Dec. 2017	Dhruvi Patel (DS17CY001)	Nanoscale micelle formation and aggregation engineered using block copolymers for targeted applications
3	Dec. 2017	Vinod Kumar (DS17CY005)	Self-assembly and micellar transition induced in cationic surfactant-additives system
4	July 2017	Anilkumar Jangir (D17CY003)	Deep Eutectic Solvents (DES): Synthesis, Characterization and Applications
5	Dec. 2013	Amit G. Shirke (DS13CY001)	Vegetable oil-based polymer synthesis with detailed characterization and their Applications. (Thesis submitted)
6	Dec. 2013	Bharatkumar B. Kanoje (DS13CY003)	Micellization behaviour of Conventional and Dimeric Surfactant in aqueous solution system: Characterization and their Applications. (Thesis submitted)

K. Research students (M.Sc. Dissertation)

No.	Year	Student Name	Title	Place
1	May 2019	Krutarth Makhwana	Surface-active ionic liquids (SAILS) as pivotal inhibitor tool in metal corrosion inhibition.	ACD, SVNIT, Surat.
2	May 2019	Shweta Agarwal	Clouding behavior of PEO-PPO-PEO based block copolymers in aqueous solution.	ACD, SVNIT, Surat.
3	May 2019	Sunny Bhatt	Ternary Deep Eutectic Solvents (Choline Chloride-Glycerol- citric acid) synthesis and characterization.	ACD, SVNIT, Surat.
4	May 2019	Chintan Patel	Controlled morphology in calcium carbonate using surface-active ionic liquids (SAILS) as a template	ACD, SVNIT, Surat.
5	May 2019	Harsh Mandviwala	Excess properties of Choline chloride-Lactic acid based deep eutectic solvents and its binary mixtures with alcohol.	ACD, SVNIT, Surat.
6	May 2019	Shiv Khusagra	Rod-/worm-like micellar transition in cationic surfactant as induced by propyl gallate.	ACD, SVNIT, Surat.
7	May 2019	Kaushal Hirapara	Drug Solubility enhancement using green Deep Eutectic Solvents	ACD, SVNIT, Surat.
8	May 2019	Shweta Singh	Preparation of Silver nanoparticles containing Pluronic based mixed polymeric micelles with in vitro study	VNSGU Surat & ACD, SVNIT, Surat.
9	May 2019	Bhumi Lad	In vitro toxicity profile and drug dissolution enhancement using ammonium-based Deep Eutectic Solvents	VNSGU Surat & ACD, SVNIT, Surat.
10	May 2018	Peeyush Desai (I12CY020)	Protein conformation in deep eutectic solvents.	ACD, SVNIT, Surat.
11	May 2018	Roshni More (I12CY033)	Behavior of pH-responsive cationic Gemini surfactants in aqueous solution.	ACD, SVNIT, Surat.
12	May 2018	Dwarkesh Satodia (I12CY020)	Silver nanoparticles loaded with gemini surfactants with their detailed surface and antimicrobial characterization.	ACD, SVNIT, Surat.
13	May 2018	Jay Hingrajiya (I12CY033)	Vegetable oil-based polyol for polymer synthesis with detailed characterization and desired applications.	ACD, SVNIT, Surat.
14	May 2017	Bhavin Bhagat (I12CY020)	Vesicle/rod-like micellar transition in cationic dimeric surfactants in presence of ethanol.	ACD, SVNIT, Surat.
15	May 2017	Dhruvi Patel (I12CY033)	Drugs as "Green" pivotal inhibitor tool against metal corrosion.	ACD, SVNIT, Surat.
16	May 2016	Sanya Shafi Zaman (I11CY009)	Study on Degradation of MDEA (Methyl diethanolamine) used in Gas Sweetening Unit and its effect on Sweetening Process at ONGC Hazira Plant.	Dr. J. K. Srivastava, GM, ONGC-Surat & ACD, SVNIT, Surat.
17	May 2016	Dipeshkumar Barvaliya (I11CY013)	Soya fatty acid based water reducible alkyd polyester resin used in liquid printing ink.	Dr. Kalpesh I. Patel, SCT Dept., Institute of Sci. & Tech. for Adv. Studies and Research,

				Vallabh Vidyagar.
18	May 2015	Payal Baheti (I10CY011)	Glycerol for the synthesis of the biopolymers: Study the effect of catalyst on it.	Prof. Kan-Sen Chou, Dept. of Chemical Engineering, National Tsing Hua University, (NTHU), Taiwan.
19	May 2015	Dhvani Patel (I10CY016)	Morphology modification of Calcium Carbonate particles using Polymer-Surfactant Template.	ACD, SVNIT, Surat.
20	May 2015	Prafull B. (I10CY020)	Synthesis of Polyol from Tung oil.	ACD, SVNIT, Surat.