

# CURRICULUM VITAE

## **Dr. Rekha Goswami Shrestha**

Postdoctoral researcher

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## **Education:**

1. **Doctor of Engineering (Ph.D):** Title of Ph.D thesis; "Formation and Rheological Behavior of Wormlike Micellar Solution in Amino Acid Based Anionic Surfactant (N-dodecylglutamic acid) Aqueous Systems" Graduate School of Environment and Information Sciences, Yokohama National University, Japan, March **2009**.
2. **Master's Degree in Chemistry (M. Sc.)** Specialized in Inorganic Chemistry, Central Department of Chemistry, Tribhuvan University, Kathmandu, Nepal **2003**.

## **Work Experience:**

- Visiting Resercher, Supramolecular Group, National Institute of Materials Science. (April 2012-present)
- Postdoctoral Fellow, Tokyo University of Science, Yamazaki, Noda, Japan (April **2012**-Present)
- **JSPS** (Japan Society for the Promotion of Science) postdoctoral fellow, Tokyo University of Science, Yamazaki, Noda, Japan (April **2010**-March **2012**)
- Postdoctoral fellow, Tokyo University of Science, Yamazaki, Noda, Japan (April 2009-March **2010**)

## **Research Experiences (from 2006-till date):**

- Shape, size and structural control of fullerene (C<sub>60</sub>) crystal: Synthesis and characterization, their properties, and applications.
- Formation and characterization of O/W emulsions in polyglycerol fatty acid esters.
- Nonaqueous phase behavior of polyglycerol fatty acid esters (non-ionic surfactants) in different nonpolar oils.
- SAXS study of non-ionic micelles in a variety of organic solvents. Shape, size and structural control of reverse micelles. Synthesis and rheological behavior of reverse wormlike micelles.
- Aqueous and Nonaqueous foams stabilized by the dispersed surfactant solid or liquid crystal.
- Equilibrium, dynamic surface tension and surface dilatational elasticity properties of surfactants or protein solutions.
- SAXS and Rheology study of wormlike micelles in various surfactants (ionic and noionic) systems and effect of additives on the structure of parent micelles.

## **List of Publications:**

### **2013**

1. **Shrestha, L.K.\***; Shrestha, R.G.; Neus, U.; Rodríguez-Abreu, C.; Ariga, K. "In-Situ Formation of Silver Nanoparticles Using Nonionic Surfactant Reverse Micelles as Nanoreactors". *J. Nanosci. Nanotechnol.* (**Accepted**)
2. Shrestha, R.G.; Shrestha, L.K. "Structure of Nonionic Reverse Micelles in Octylbenzene." *J. Dispers. Sci. Technol.* (**In press**).

## 2012

3. Sakai, K.; Nomura, K.; **Shrestha, R.G.**; Endo, T.; Sakamoto, K.; Sakai, H.; Abe, M. "Wormlike Micelle Formation by Acylglutamic Acid with Alkylamines"  
*Langmuir* **2012**, 28 (51), 17617–17622
4. **Shrestha, R.G.\***; Nomura, K.; Yamamoto, M.; Yamawaki, Y.; Tamura, Y.; Sakai, K.; Sakai, H.; Sakamoto, K.; Abe, M. Peptide Based Gemini Amphiphiles: Phase Behavior and Rheology of Wormlike Micelles.  
*Langmuir* **2012**, 28 (44), 15472–15481
5. Shrestha, L.K.; **Shrestha, R.G.**; Aramaki, K.; Hill, J.P.; Ariga, K. "Nonionic Reverse Micelle Formulation and their Microstructure Transformations in an Aromatic Solvent Ethylbenzene."  
*Colloids and Surfaces A: Physicochemical and Engineering Aspects*, **2012**, 414, 140-150.
6. **Shrestha, R.G.**; Shrestha, L.K.; Acharya, S.; Aramaki, K.; Ariga, K. "Water Induced Microstructure Transformation of Diglycerol Monolaurate Reverse Micelles in Ethylbenzene."  
*J. Oleo Sci.* **2012**, 61(10), 575-84.
7. Shrestha, L.K.; **Shrestha, R.G.**; Acharya, S.; Aramaki, K.; Hill, J. P.; Ariga, K. "Structural Characterizations of Diglycerol Monomyristate Reverse Micelles in Aromatic Solvent Ethylbenzene."  
*J. Nanosci. Nanotechnol.* **2012**, 12, 3716-3724.
8. Shrestha, L.K.; **Shrestha, R.G.**; Aramaki, K.; Acharya, S.; Ariga, K. Structure and Rheology of Charge-Free Reverse Micelles in Aromatic Liquid Phenyltolane.  
*J. Nanosci. Nanotechnol.* **2012**, 12, 3701-3715.
9. **Shrestha, R.G.\***; Sharma, S.C.; Sakai, K.; Sakai, H.; Abe, M. "Polyoxyethylene Cholesterol Ether-Based Aqueous Wormlike Micelles."  
*Colloid and Polym. Sci.* **2012**, 290 (4), 339-348.

## 2011

10. **Shrestha, R.G.\***; Abezgauz, L.; Danino, D.; Sakai, K.; Sakai, H.; Abe, M. "Structure and Dynamics of Polyoxyethylene Cholesteryl Ether Wormlike Micelles: Rheometry, SAXS and Cryo-TEM Studies"  
*Langmuir* **2011**, 27, 12877–12883.
11. Shrestha, L.K.; **Shrestha, R.G.**; Abe, M.; Ariga, K. "Reverse micelle microstructural transformations induced by oil and water."  
*Soft Matter* **2011**, 7, 10017-10024.
12. **Shrestha, R.G.**; Shrestha, L.K.; Ariga, K.; Abe, M. "Reverse Micelle Microstructural Transformations Induced by Surfactant Molecular Structure, Concentration, and Temperature."  
*J. Nanosci. Nanotechnol.* **2011**, 11, 7665-7675.
13. **Shrestha, R.G.** Shrestha, L.K.; Aramaki, K.; Abe, M. "SAXS and Rheometry Studies of Diglycerol Monolaurate Reverse Micelles in Styrene."  
*J Oleo Sci.* **2011**, 60, 393.
14. Shrestha, L.K.; **Shrestha, R.G.**; Aramaki K. "Intrinsic Parameters for the Structure Control of Nonionic Reverse Micelles in Styrene: SAXS and Rheometry Studies."  
*Langmuir* **2011**, 27, 5862.

15. **Shrestha, R.G.** Shrestha, L.K. “Effect of Mixing Solvents on the Structure of Trehalose Triisostearate Nonionic Surfactant Reverse Micelles.”  
*J. Nepal Chem. Soc.* **2011**, 27, 26-33.
16. **Shrestha, R.G.\***; Sakai, K.; Sakai, H.; Abe, M. “Rheological Properties of Polyoxyethylene Cholesteryl Ether Wormlike Micelles in Aqueous System.”  
*J. Phys. Chem. B* **2011**, 115 (12), 2937–2946.
17. Shrestha, L.K.; **Shrestha, R.G.**; Aramaki, K.; Ariga, K. “Structure of Diglycerol Monomyristate Reverse Micelles in Styrene: A Small-Angle X-Ray Scattering (SAXS) Study.”  
*J. Nanosci. Nanotechnol.* **2011**, 11, 6986-6994.
18. **Shrestha, R.G.\***; Shrestha, L.K.; Matsunaga, T.; Shibayama, M.; Aramaki, K. “Lipophilic tail architecture and molecular structure of neutralizing agent for the controlled rheology of viscoelastic fluid in amino-acid based anionic surfactant system.”  
*Langmuir* **2011**, 27, 2229-2236.
19. Shrestha, L.K.; **Shrestha, R.G.**; Aramaki K. “Growth control of nonionic reversed micelles by surfactant and solvent molecular architecture and water addition.”  
*J. Nanosci. Nanotechnol.* **2011**, 11, 4863-4873.
20. Shrestha, L.K.; Sato, T.; **Shrestha, R.G.**; Hill, J.; Ariga, K.; Aramaki K. “Structure and rheology of reverse micelles in dipentaerythryl tri-(12-hydroxystearate)/oil systems.”  
*Phys. Chem. Chem. Phys.* **2011**, 13, 4911–4918.

## **2010**

21. Shrestha, L.K.; **Shrestha, R.G.**; Oyama, K.; Matsuzawa, M.; Aramaki K. “Structure of Diglycerol Polyisostearate Nonionic Surfactant Micelles in Nonpolar Oil Hexadecane: A SAXS Study”  
*J. Oleo Sci.* **2010**, 59, 339-350.
22. Rodríguez-Abreu C.; Sanchez Margarita, M. Bešter Rogač; **Shrestha R.G.**; Shrestha L. K.; Varade D., Ghosh G. “Solution behavior and unexpected transitions in aqueous mixtures of low and high molecular weight hydrophobic amphiphiles”  
*Colloid and Polym. Sci.* **2010**, 28, pp 739–751.
23. Sakai, K.; Ikeda, R. ; Sharma, S. C.; **Shrestha, R.G.**; Ohtani, N.; Yoshioka, M.; Sakai, H.; Abe, M.; Sakamoto, K. “Active Interfacial Modifier: Stabilization Mechanism of Water in Silicone Oil Emulsions by Peptide-Silicone Hybrid Polymers”  
*Langmuir* **2010**, 26 (8), pp 5349–5354.
24. **Shrestha, R.G.**; Shrestha, L.K.; Solans, C.; Aramaki, K. “Nonaqueous Foam with Outstanding Stability in Diglycerol Monomyristate/Olive Oil System”  
*Colloid and Surfaces A.* **2010**, 353, 157-165.

## **2009**

25. **Shrestha, R.G.**; Shrestha, L.K.; Aramaki, K. “Rheology of Wormlike Micelles in Aqueous Systems of a Mixed Amino Acid Based Anionic Surfactant and Cationic Surfactant.”  
*Colloid and Polym. Sci.* **2009**, 287, 11, 1305-1315.
26. Shrestha, L.K.; **Shrestha, R.G.**; Oyama, K.; Matsuzawa, M.; Aramaki, K. “Structural Investigation of Diglycerol Polyisostearate Reverse Micelles in Organic Solvents.”

*J. Phys. Chem. B* **2009**, *113*, 12669-12679.

27. Shrestha, L.K.; **Shrestha, R.G.**; Aramaki, K. "Self-Assembled Structures of Diglycerol Monolaurate-and Monomyristate in Olive Oil."  
*J. Dispers. Sci. Technol.* **2009**, *30*, 1525-1532.
28. Shrestha, L.K.; **Shrestha, R.G.**; Varade, D.; Aramaki, K. "Tunable Parameters for the Structural Control of Reverse Micelles in Glycerol Monoisostearate/Oil Systems: A SAXS Study."  
*Langmuir* **2009**, *25*(8), 4435-4442.
29. Sharma, S.C.; **Shrestha, R.G.**; Shrestha, L.K.; Aramaki, K. "Viscoelastic Wormlike Micelles in Mixed Nonionic Fluorocarbon Surfactants and Structural Transition Induced by Oils."  
*J. Phys. Chem. B* **2009**, *113* (6), 1615-1622.
30. **Shrestha, R.G.**; Rodriguez-Abreu C.; Aramaki, K. "Wormlike micelles in mixed amino acid surfactant/nonionic surfactant aqueous systems and the effects of added electrolytes."  
*J. Oleo Sci.* **2009**, *58*, 243-254.
31. **Shrestha, R.G.**; Tobita, K.; Aramaki, K. "Rheological Behavior of Viscoelastic Wormlike Micelles in Mixed N-dodecylglutamic Acid/Poly(oxyethylne) hexadecyl Ether Systems in Presence of Salts."  
*Colloids and Surfaces. A*, **2009**, *332*, 103-111.
32. **Shrestha, R.G.**; Aramaki, K. "The Study of Salt Induced Viscoelastic Wormlike Micelles in Aqueous Systems of Mixed Anionic/Nonionic Surfactants."  
*J. Nepal Chem. Soc.* **2008/2009**, *23*, 65-73.

## **2008**

33. Sharma, S.C.; **Shrestha, R.G.**; Shrestha, L.K.; Aramaki, K. "Rheological Behavior of Viscoelastic Wormlike Micelles in Mixed Sodium Dodecyl Trioxyethylene Sulphate/Monolaurin Aqueous System."  
*Colloid and Polym. Sci.* **2008**, *286*, 1613-1619.
34. Shrestha, L.K.; **Shrestha, R.G.**; Sharma, S.C.; Aramaki, K. "Stabilization of Nonaqueous Foam With Lamellar Liquid Crystal Particles in Diglycerol Monolaurate/Olive Oil System."  
*J. Colloid and Interface Sci.* **2008**, *328*, 172-179.
35. **Shrestha, R.G.**; Shrestha, L.K.; Sharma, S.C.; Aramaki, K. "Phase Behavior and Microstructures of Nonionic Fluorocarbon Surfactant in Aqueous Systems."  
*J. Phys. Chem. B* **2008**, *112*, 10520-10527.
36. **Shrestha, R.G.**; Shrestha, L.K.; Aramaki, K. "Wormlike Micelles in Mixed Amino-Acid Based Anionic/Nonionic Surfactant Systems."  
*J. Colloid and Interface Sci.* **2008**, *322*, 496-604.

## **2007**

37. Shrestha, L.K.; **Shrestha, R.G.**; Iwanaga, T.; Aramaki, K. "Aqueous Phase Behavior of Diglycerol Fatty Acid Esters."  
*J. Dispers. Sci. Technol.* **2007**, *28*, 883-891.
38. Shrestha, L.K.; **Shrestha, R.G.**; Solans, C.; Gonzalez, C.; Aramaki, K. "Effect of Added Water on the Foaming Properties of Diglycerol Fatty Acid Esters-Oil Systems."

39. Sharma, S.C.; **Shrestha, R.G.**; Varade, D.; Aramaki, K. "Rheological Behavior of Gemini-Type Surfactant/Alkanolamide/Water Systems". *Colloids and Surfaces A* 2007, 305, 1-3, 83-88.
40. **Shrestha, R.G.**; Shrestha, L.K.; Aramaki, K. "Formation of Wormlike Micelles in Mixed Amino-Acid Based Anionic Surfactant and Cationic Surfactant Systems". *J. Colloid and Interface Sci.* 2007, 311, 276-284.
41. Shrestha, L.K.; Saito, E.; **Shrestha, R.G.**; Kato, H.; Takase, Y.; Aramaki, K. "Foam Stabilized by Dispersed Surfactant Solid and Lamellar Liquid Crystal in Aqueous Systems of Diglycerol Fatty Acid Esters". *Colloids and Surfaces A* 2007, 293, 262-271.

### **Paper Presentation:**

- **Oral: Shrestha, R.G.**; Sakai, K.; Sakamoto, K., Sakai, H.; Abe, M. "Structure, Dynamics and Applications of Wormlike micelles." Mini-workshop Satellite Meeting of IACIS2012, Chiba Institute of Science, Choshi, Japan, May 11-12, 2012.
- **Oral: Shrestha, R.G.**; Danino, D.; Sakai, K.; Sakai, H.; Abe, M. "Structure and Dynamics of Self-Healing Formulation in Cholesteryl Ether Surfactant System." International Conference in Advanced Materials and Nanotechnology for Sustainable Development, Kathmandu, Nepal, October 21-23, 2011.
- **Poster: Shrestha, R.G.**; Sharma, S.C. Sakai, K.; Sakai, H.; Abe M. "Viscoelastic Solutions with Polyoxyethylene Cholesteryl and Alkyl Ethers." UK Colloids 2011: An International Colloid and Surface Science Symposium, July 4-6, De Vere Venue, Canary Wharf, London.
- **Poster: Shrestha, R.G.**; Sakai, K.; Sakai, H.; Abe M. "Self-healing formulation with aqueous cholesteryl ether solution." NanoFormulation 2011, June- July 26-1, 2011, as part of ICMAT.
- **Oral: Shrestha, R.G.**; Danino, D.; Sakai, K.; Sakai, H.; Abe, M. "Wormlike Micelles in Mixed Aqueous Solution of Polyoxyethylene Cholesterol and Lipophilic Nonionic Surfactants." 18<sup>th</sup> International Symposium on Surfactants in Solution (SIS), November 14-19, 2010, Melbourne, Australia.
- **Poster: Shrestha, R.G.**; Sakai, K.; Sakai, H.; Abe M. "Wormlike Micelles in Mixed Aqueous Solution of Polyoxyethylene Cholesterol and Lipophilic Nonionic Surfactants." International Conference on Nanoscopic Colloid and Surface Science and 11<sup>th</sup> Australia-Japan Colloid and Interface Science Symposium (NCSS), September 19-22, 2010, Makuhari Messe, Chiba, Japan.
- **Poster: Shrestha, R.G.**; Shrestha, L.K.; Aramaki, K. "Structure and Dynamics of Wormlike Micelles in Mixed Aqueous Solution of Polyoxyethylene Cholesterol and Lipophilic Nonionic Surfactants ." The 24<sup>th</sup> Conference of the European Colloid and Interface Society (ECIS), September 5-10, 2010, Prague, Czech Republic.
- **Poster: Shrestha, R.G.**; Shrestha, L.K.; Aramaki, K. "Nonaqueous Foam With Outstanding Stability in Diglycerol Monomyristate/Olive Oil System." JSPS-DST Asia Academic Seminar 2009 December 8-14, 2009, Yokohama, Japan.
- **Poster: Shrestha, R.G.**; Shrestha, L.K.; Aramaki, K.; Sakai, K.; Sakai, H.; Abe, M. "Wormlike Micelles in Mixed Amino Acid-Based Anionic/Cationic Surfactant Systems: Effects of Neutralizing Agents and Chain Length of Cosurfactants." The 3<sup>rd</sup> Asian Conference On Colloid and Interface (ACCIS), October 11-14, 2009, Jeju, Jeju Island, Korea.
- **Poster: Shrestha, R.G.**; Shrestha, L.K.; Aramaki, K. "Formation of Wormlike Micelles in Mixed Anionic and Nonionic Surfactant Systems." The 17<sup>th</sup> International Symposium in Surfactant in Solutions (SIS), August 17-23, 2008, Berlin, Germany.
- **Poster:** Shrestha, L.K.; **Shrestha, R.G.**; Sharma S.C.; Sato T.; Aramaki, K. "Small-Angle X-ray Scattering Study on Fluorinated Micelles in Aqueous Systems." Chemical Congress-2008, May 23-25, 2008, Kathmandu, Nepal.
- **Oral: Shrestha, R.G.**; Shrestha, L.K.; Aramaki, K. "Viscoelastic Wormlike Micellar Solution in Mixed Amino-acid Based Surfactant and Cationic Surfactant Systems." International Conference on Emerging Issues on Research and Development, April 4-6, 2007, Kathmandu, Nepal
- **Poster: Shrestha, R.G.**; Sharma S.C.; Varade D.; Aramaki, K. "Formation of Wormlike Micelles in Mixed Gemini-Type Surfactant/Alkanolamide Aqueous Systems." International Conference on Emerging Issues on Research and Development, April 4-6, 2007, Kathmandu, Nepal.

- **Oral: Shrestha, R.G.;** Shrestha, L.K.; Aramaki, K. "Formation of Wormlike Micelles in a Mixed Amino-acid Based Anionic and Cationic Surfactant Systems" 59<sup>th</sup> Divisional Meeting of Colloid and Surface chemistry, September 13-15, 2006, Sapporo (Hokkaido Univ.), Japan.

#### **Invited Lecture:**

- **Shrestha, R.G.;** Shrestha, L.K.; Aramaki, K. "Rheological Properties of Viscoelastic Wormlike Micelles in Mixed Amino-acid Based Anionic and Nonionic Surfactants in Aqueous Solutions" August 25, 2008, CSIC, Spain.
- **Shrestha, R.G.;** Shrestha, L.K.; Aramaki, K. Sakai, H.; Abe, M. "Wormlike Micelles in Amino-Acid Based Surfactant: Effects of the Neutralizing Agents and Cosurfactants on the Rheology." 90<sup>th</sup> Annual Meeting of Japan Chemical Society, Asian International Symposium - Colloid and Surface Chemistry, March 28, 2010, Kinki University, Osaka, Japan

#### **Workshops and Seminars:**

- 4<sup>th</sup> National Conference on Science and Technology; organized by Nepal Academy of Science and Technology (NAST), March 23-26, 2004.

#### **Affiliation:**

- General Member: Nepal Chemical Society.

#### **Award:**

- **The Young Scientist Award: Shrestha, R.G.;** Danino, D.; Sakai, K.; Sakai, H.; Abe, M. "Structure and Dynamics of Self-Healing Formulation in Cholesteryl Ether Surfactant System." International Conference on Advanced Materials and Nanotechnology for Sustainable Development, Kathmandu, Nepal, October 21-23, 2011.
- **Nanoscale Poster Prize by Royal Society of Chemistry:** Shrestha, L.K.; **Shrestha, R.G.;** Aramaki, K. Sato, T.; Ariga, K. "Structure and dynamics of non-ionic surfactant micelles in non-aqueous media." NanoFormulation2011, held in Singapore, 26 June to 1 July 2011, as part of ICMAT.
- **JSPS postdoctoral fellowship** from Japanese government (April 2010 – March 2012).
- **Merit Award:** I. Sc. (batch: 1996-1997), Mechi Multiple Campus, Tribhuvan University, Bhadrapur, Jhapa, Nepal.
- **Merit Award:** B. Sc. (batch: 1998-2000), Mahendra Morang Adarsha Bahumukhi Campus (1<sup>st</sup> and 2<sup>nd</sup> Year from this campus), Tribhuvan University, Bhadrapur, Jhapa, Nepal.

#### **References:**

##### **Prof. Dr. Masahiko Abe**

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