SREENIVAS KUMMARA

Polymer Engineering & Science Laboratory,
Metallurgical Engineering & Materials Science Department,
Indian Institute of Technology Bombay, Powai. INDIA.
Email: sreepolymer@gmail.com, kummarasreenivas@gmail.com

PERSONAL PROFILE

Name	: Sreenivas Kummara
Sex	: Male
Date of Birth	: 9th July 1986
Nationality	: Indian

EDUCATION

Oct 2012 - Mar 2016 **Doctor of Philosophy (Ph.D.) in Polymer materials, Engineering,**
Toyota Technological Institute, Nagoya, JAPAN.
(Department of Future Industry-oriented Basic Science and Materials).
Thesis title: "*Isotope Effect on the Isothermal Crystallization of Polyoxymethylene*".
Supervisor: **Professor Dr. Kohji Tashiro**

Jun 2006 - Oct 2008 **Master of Science (M.Sc.) in Polymer Science,**
Sri Krishnadevaraya University, Anantapur, A.P., INDIA **(80%)**

Jun 2003 - Apr 2006 **Bachelor of Science (B.Sc.) in Chemistry, Physics and Mathematics**
Sri Venkateswara University, Tirupati, A.P., INDIA **(67%)**

PROFESSIONAL EXPERIENCE

Apr 2017- Present **Institute Postdoctoral Fellow** in Metallurgical Engineering & Materials Science Department,
Indian Institute of Technology Bombay, India.
Supervisor: Professor Dr. Arup R. Bhattacharyya

Oct 2015- Mar 2016 **Research Associate** in Advanced Polymer Materials,
Toyota Technological Institute, Nagoya, JAPAN
Supervisor: **Professor Dr. Kohji Tashiro**

Jan 2009- Sept 2012 **Project Assistant** in Polymer Science and Engineering Division,
CSIR-National Chemical Laboratory, Pune, INDIA, (Project Leader/advisor: **Dr. K. Guruswamy**)
Reliance funded project: *The influence of 1, 3:2, 4 - Di (3, 4-dimethylbenzylidene) Sorbitol (DMDBS) on the morphology and mechanical properties of polypropylene*.

Jan 2008- July 2008 **MSc Project;** Polymer Science and Engineering Division,
CSIR-National Chemical Laboratory, Pune, INDIA. (**Supervisor**: **Dr. C. Ramesh**)
Thesis Title: "*Nanoparticles based nucleating agents for polypropylene: synthesis and characterization of nanosilica particles and their surface functionalization*".

ACADEMIC HONORS AND FELLOWSHIPS

- **Institute Postdoctoral Fellowship** by Indian Institute of Technology Bombay (2017-2018).
- **Scholarship for Doctoral Degree** by Toyota School Foundation, Japan (2012-2016).
- **2nd ranker** during M.Sc (2006-2008), Sri Krishnadevaraya University, Andhra Pradesh, INDIA.

PROFESSIONAL SKILLS

- Skilled in usage of Small Angle X-ray Scattering (X-ray diffractro meter Nanoviewer (Rigaku) and Bruker Nanostar), Wide Angle X-ray diffraction (2D) , powder X-ray diffraction (TTR), vibrational spectroscopy FTIR (including Kinetics), differential scanning calorimeter (DSC), thermo gravimetric analysis (TGA) and polarized optical microscopy (POM), rheology, Broadband dielectric spectroscopy, especially *in-situ* measurements of crystallization behavior using **simultaneous measurements of SAXS/WAXD/FTIR** and synchrotron X-ray measurements for clear understanding of structure and property of polymers and its various compositions.
- Shear-induced crystallization and morphological change of semicrystalline polymers and gelation process observations by various experimental methods.
- Skilled in cationic ring-opening polymerization and functional end group transformation reaction of **polyoxymethylene** Deuterated / Hydrogenated random copolymers.

RESEARCH INTEREST

- Micro-structural evolution process during the melt and solvent induced crystallization process
- Structure – property of semicrystalline polymers, blends and composites of polymer/organic (or) inorganic hybrid-materials
- Shear-induced crystallization
- Block copolymers and their self-assembly

RESEARCH PUBLICATIONS

In Progress

1) **Kummara, S.;** Vibhav, V.; Bhattacharyya, A. R. "*Mechanical Shear Effect on Morphology and Dielectric Properties of Polyvinyl Alcohol – Graphite Nano Platelets Nanocomposites."*
Manuscript in preparation.

2) **Kummara, S.;** Khandekar, D.; Sarkar, P.; Bandyopadhyaya, R.; Bhattacharyya, A. R. "*Interfacial Interaction and Relaxation Phenomenon of Polyvinyl Alcohol – Mesoporous Silica Composite Films."*
The manuscript is ready to submit to ***Macromolecules***.

3) Rama, P.; **Kummara, S.;** Bandyopadhyaya, R.; Panwar, A. S.; Bhattacharyya, A. R**.** "*The Role of Polyelectrolyte on the Electrical Conductivity of Polymer/Carbon Nanotube Composite Thin Film Fabricated by Layer-By-Layer Deposition*". The Manuscript submit to ***Materials Science & Engineering -B***.

4) Tashiro, K.; **Kummara, S.**; Sato, M. "*Isotope effect on the melt-isothermal crystallization process of polyethylene D/H random copolymers*". **Manuscript in preparation**.

Published

5) Tashiro, K.; **Kummara, S.;** Yamamoto, H.; Yoshioka, T.; Tahara, D.; Masunaga, H.; Ohta, N. "*Study of Melt-Isothermal Crystallization Phenomenon of Crystalline Polymers by Utilizing a Simultaneous Measurement System of Synchrotron Wide-Angle and Small-Angle X-ray Scatterings and Transmission FTIR Spectra: Application to the Case of Polyoxymethylene*".
SPring-8 Section A: Scientific Research Report, 2017, *2013A1284 / BL40B2*.

6) **Kummara, S.;** Tashiro, K. "*Isotope effect on the structural evolution process in the isothermal crystallization phenomenon of polyoxymethylene*".
Polymer, 2016, *90*, 76-88.

7) **Kummara, S.;** Tashiro, K. "*Phenomenological study of the isotope effect on the equilibrium melting point of polymer crystal*".
Polymer, 2015, *80*, 138-145.

8) **Kummara, S.;** Tashiro, K.; Monma, T.; Horita, K. "*Isotope effect on the melt–isothermal crystallization of polyoxymethylene D/H random copolymers and D/H blend samples*".
Macromolecules, 2015, *48*, 8070-8081.

9) Basupalli, B.; **Kummara, S.;** Kumaraswamy, G.; and Prasad, B. L. V. "*Ultrathin sheets of metal or metal sulfide from molecularly thin sheets of metal thiolates in solution*".
Chem. Mater., 2014, *26*, 3436-3442.

10) **Sreenivas, K.;** Kumaraswamy, G. "*Large amplitude oscillatory shear induces crystal chain orientation in velocity gradient direction*".
ACS Macro Lett., 2013, *3*, 6-9.

11) Mallick, A.; Schön, E-M.; Panda, T.; **Sreenivas, K.;** Díaz, D. D.; Banerjee. R. "*Fine-tuning the balance between crystallization and gelation and enhancement of CO_2 uptake on functionalized calcium based MOFs and metallogels*".
J. Mater. Chem., 2012, *22*, 14951-14963.

12) **Sreenivas, K.;** Kumaraswamy, G.; Basargekar, R. S. "*Phase separation of DMDBS from iPP, and controlled crystalline orientation*".
APS Meeting Abstract, 2012, *1*, 49011.

13) **Sreenivas, K.;** Pol, H. V.; Kumaraswamy. G. "*The influence of DMDBS on the morphology and mechanical properties of polypropylene cast films*". **(Highlighted by Linkam Scientific Instruments TST350, Published on Jan 8, 2013. Published in AZO materials on Jan 9, 2013 and in LabBulletin.)**
Polym. Eng. Sci., 2011, *51*, 2013-2023.

14) **Sreenivas, K.;** Basarhekar, R.; Kumaraswamy, G. "*Phase separation of DMDBS from PP: Effect of polymer molecular weight and tacticity*".
Macromolecules, 2011, *44*, 2358-2364.

Google Scholar Page : https://scholar.google.com/citations?user=JJepfFlv9uwC&hl=en

PUBLISHED CONTRIBUTION TO ACADEMIC CONFERENCES

1) **Kummara, S**.; Tashiro, K. "*Scalling of melt-isothermal crystallization rate of polyoxymethylene by using a series of D/H random copolymers".*
Polymer Preprints, *Japan (SPSJ) 65(1)*, 2016.

2) **Kummara, S.;** Tashiro, K.; Monma, T.; Horita, K. *"Isotope effect on the isothermal crystallization behavior of polyoxymethylene D/H random copolymers".*
Polymer Preprints, *Japan (SPSJ) 64(2)*, 2015, 2G01

3) **Kummara, S.;** Tashiro, K.; Monma, T.; Horita, K. "*Vibrational spectra and morphologies of polyoxymethylene D/H random copolymers".*
Polymer Preprints, *Japan (SPSJ) 64(1)*, 2015.

4) **Kummara, S.;** Tashiro, K. "*Isotope effect on the melt-isothermal crystallization process of polyoxymethylene*".
Fiber Symposium of Tokai, 2014, *28*, 32-33.

5) **Kummara, S.;** Tashiro, K.; Monma, T.; Horita, K. **"***Hierarchical structural evolution of polyoxymethylene in the isothermal crystallization process from the melt: Study of an isotope effect on the melting and crystallization behaviors*".
Polymer Preprints, *Japan (SPSJ) 63(2)*, 2014, 5322-5323..

6) **Kummara, S.;** Tashiro, K. "*Hierarchical structural change of polyoxymethylene in the isothermal crystallization process from the melt".*
***Polymer Preprints**, Japan (SPSJ) 63(1)*, 2014, 1313-1314.

7) **Kummara, S.;** Yoshioka, T.; Tahara, S.; Yamamoto, H.; Tashiro, K.; Ohta, N. "*Isothermal crystallization behavior of polyoxymethylene studied by the time-resolved FTIR, Synchrotron SAXS and WAXD simultaneous measurements*".
Fiber Symposium of Tokai, 2013, *27*, 57-58.

8) Basupalli, B.; **Sreenivas, K**.; Kumaraswamy, G.; Prasad, B. L. V. "*Investigations on the structural details and thermal behaviour of Palladium octanethiolate*".
National Science Day Celebrations on February 28, 2011, at CSIR- National Chemical Laboratory, INDIA

9) **Sreenivas, K.**; Kumaraswamy, G. "*Phase separation of DMDBS from PP: Effect of polymer molecular weight and tacticity"***.**
Pune-Mumbai Soft Matter IV- Feb 2011, conducted by IISER, Pune.

10) **Sreenivas, K.;** Kumaraswamy, G. "*Unusual Orientation of PP crystallization under oscillatory shear".*
National Science Day celebrations on February 28, 2010, at CSIR- National Chemical Laboratory, INDIA.

11) **Sreenivas, K.;** Kumaraswamy, G. *"Orthogonal orientation of PP crystallized with oscillatory shear".*
Pune-Mumbai Soft Matter II - Dec 2009, conducted by National Chemical Laboratory, Pune.

12) Krishana, K. V.; **Sreenivas, K.;** VIjayamohan.; Ramesh, C. ***"****Synthesis and characterization of organo-functionalization of nanosilica particles".*
International Conference on Advances in Polymer Technology-2008 (APT-2008) conducted by Dept. of PS&RT, CUSAT, INDIA.