Dr. Manish Kumar

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Education:

Ph.D., Chemical Engineering, 2017
Indian Institute of Technology Guwahati, Guwahati (India)

M.Tech., Plastics Engineering, 2010
U.P. Technical University, Lucknow (India)

M.Sc., Polymer Science, 2006
Chaudhary Charan Singh University, Meerut (India)

Professional Experience:

March 2024 - till date:	Assistant Professor Plastic Technology Department, HBTU, Kanpur
April 2022 – March 2024	Faculty (Contract) MSME-Technology Development Centre, Meerut
September 2017- August 2020	Postdoctoral Researcher, University of Minho, Azurem, Portugal
February 2017- July 2017	Adhoc Faculty, CIPET Ahmedabad

Research Interest:

Polymer Nanocomposites, Polymer Processing, Rheology, Polymer Composites, Nanomaterials

Research Publications:

In Journals:

1. **Manish Kumar**, Samarshi Chakraborty, Pradeep Upadhyaya and G. Pugazhenthi, Morphological, mechanical and thermal features of PMMA nanocomposites containing two-dimensional (2D) Co-Al layered double hydroxide (LDH), **Journal of Applied Polymer Science**, Vol. 135, 5, 2018**.** Pages 45774 (1-11).

2. **Manish Kumar**, Vivek Chaudhary, Kelothu Suresh and G. Pugazhenthi, Synthesis and characterization of exfoliated PMMA/Co-Al LDH nanocomposites via solvent blending technique, **RSC Advances**, 5, 2015. Pages 39810-39820.

3. **Manish Kumar**, Pradeep Upadhyaya and G. Pugazhenthi, Fabrication of PMMA nanocomposites with modified nanoclay by melt intercalation, **Composite Interfaces**, Vol. 21, 9, 2014. Pages 819-832.

4. **Manish Kumar,** S. Arun, Pradeep Upadhyaya and G. Pugazhenthi, Properties of PMMA nanocomposites prepared using various compatibilizers, **International Journal of Mechanical and Materials Engineering,** 10 (2015) 7.

5. **Manish Kumar**, Vijay Kumar, A. Muthuraja, S. Senthilvelan, G. Pugazhenthi, Influence of nanoclay on the rheological properties of PMMA/organoclay nanocomposites prepared by solvent blending technique, **Macromolecular Symposia,** Vol. 365, 1, 2016. Pages 104-111.

6. **Manish Kumar**, N. Shanmuga Priya, S. Kanagaraj and G. Pugazhenthi, Melt rheological behaviour of PMMA nanocomposites reinforced with modified nanoclay, **Nanocomposites,** Vol. 2, 3, 2016. Pages 109-116.

7. **Manish Kumar**, C.S. Sharma, Pradeep Upadhyaya, Vishal Verma, K.N. Pandey, Vijai Kumar and D.D. Agarwal, Calcium carbonate ($CaCO_3$) nanoparticle filled Polypropylene: Effect of particle surface treatment on mechanical, thermal, and morphological performance of composites, **Journal of Applied Polymer Science**, Vol. 124, 4, 2012. Pages 2649-2656.

8. Pradeep Upadhyaya, Ajay K. Nema, C.S. Sharma, Vijai Kumar, D.D. Agarwal and **Manish Kumar**, Physicomechanical study of random polypropylene filled with treated and untreated nano-calcium carbonate: Effect of different coupling agents and compatibilizer, **Journal of Thermoplastic Composite Material,** Vol. 26, 7, 2013. Pages 988-1004.

9. Samarshi Chakraborty, **Manish Kumar**, Kelothu Suresh and G. Pugazhenthi, Influence of organically modified Ni-Al layered double hydroxide (LDH) loading on the rheological properties of poly(methyl methacrylate) (PMMA)/LDH blend solution, **Powder Technology**, Vol. 256, 2014. Pages 196-203.

10. Samarshi Chakraborty, **Manish Kumar**, Kelothu Suresh and G. Pugazhenthi, Investigation of structural, rheological and thermal properties of PMMA/ONi-Al LDH nanocomposites synthesized via solvent blending method: Effect of LDH loading, **Chinese Journal of Polymer Science**, Vol. 34, 6, 2016. Pages 739-754.

11. Vijay Kumar, **Manish Kumar** and G. Pugazhenthi, Effect of nanoclay content on the structural, thermal properties and thermal degradation kinetics of PMMA/organoclay nanocomposites, **International Journal of Nano and Biomaterials**, Vol. 5, 1, 2014. Pages 27-44.

12. Payel Sen, Kelothu Suresh, R. Vinoth Kumar, **Manish Kumar** and G. Pugazhenthi, A simple solvent blending coupled sonication technique for synthesis of polystyrene (PS)/ multi-walled carbon nanotube (MWCNT) nanocomposites: Effect of modified MWCNT content, **Journal of Science: Advanced Materials and Device**, Vol. 1, 3, 2016. Pages 311-323.

13. Kelothu Suresh, R. Vinoth Kumar, **Manish Kumar**, M. Jeyapriya, R. Anbarasan and G. Pugazhenthi, Sonication assisted synthesis of polystyrene (PS)/organoclay nanocomposites: Influence of clay content, **Applied Nanoscience** Vol. 7, 5, 2017. Pages 215-223.

14. Kelothu Suresh, **Manish Kumar**, Ramagopal Uppaluri, G. Pugazhenthi, Enhanced mechanical and thermal properties of polystyrene (PS) nanocomposites prepared using modified Ni-Al layered double hydroxide (LDH) via melt intercalation technique, **Journal of Science: Advanced Materials and Device** Vol. 2, 2, 2017. Pages 245-254.

15. Kelothu Suresh, Rijumoni Boro, R. Vinoth Kumar, **Manish Kumar** and G. Pugazhenthi, Rheological Behavior of Polystyrene (PS)/Co-Al Layered Double Hydroxide (LDH) Blend Solution obtained Through Solvent Blending Route: Influence of LDH Loading and Temperature, **Materials Today: Proceedings** Vol. 5, 1, 2018. Pages 1359-1371.

16. G. Pugazhenthi, Kelothu Suresh, R. Vinoth Kumar, **Manish Kumar** and Rituraj Kumar Surin, A Simple Sonication Assisted Solvent Blending Route for Fabrication of Exfoliated Polystyrene (PS)/Clay Nanocomposites: Role of Various Clay Modifiers, **Materials Today: Proceedings** Vol. 5, 2, 2018. Pages 13191-13210.

Presentation/Publications in International and National Conferences:

1. **Manish Kumar,** Helena Rocha and J.P. Nunes, Using piezoelectric embedded sensors for detecting barely visible impact damages (BVID) in CFRP Laminates, **Polímeros 2019**, Guimarães, Portugal, 15 July 2019.

2. **Manish Kumar**, Helena Rocha, J.P. Nunes and G. Pugazhenthi, Mechanical, thermal and morphological characteristics of poly(methyl methacrylate) (PMMA) nanocomposites reinforced with Cu-Cr layered double hydroxide, European Conference on Composite Materials **(ECCM-18)**, Athens, Greece, 24-28 June 2018.

3. **Manish Kumar**, Pradeep Upadhyaya and G. Pugazhenthi, Preparation and characterization of PMMA/Cu-Cr LDH nanocomposites prepared via melt intercalation method, International conference on polymer science and technology **(MACRO-2017)**, Trivandrum, India, 8-11 January 2017.

4. **Manish Kumar,** Samarshi Chakraborty, Kelothu Suresh and G. Pugazhenthi, Influence of Cu-Cr layered double hydroxide (LDH) on the rheological properties and thermal degradation kinetics of PMMA nanocomposites, AIChE Annual Meeting **(AIChE-2015),** Salt Lake City, USA, 8-13 November 2015.

5. **Manish Kumar**, S. Arun, Pradeep Upadhyaya and G. Pugazhenthi, Role of different compatibilizers on the properties of PMMA/clay nanocomposites, Advances in Materials and Processing Technologies **(AMPT-2014)**, Dubai, UAE, 16-20 November 2014.

6. **Manish Kumar**, A. Muthuraja and G. Pugazhenthi, Tribological studies of PMMA nanocomposites with organoclay reinforcements, Advances in Sustainable Polymers **(ASP-2014)**, IIT Guwahati, India, 10-11 January 2014.

7. **Manish Kumar**, Vijay Kumar, Pradeep Upadhyaya and G. Pugazhenthi, Mechanical properties of PMMA/organoclay nanocomposites prepared via melt intercalation technique, International Conference on Materials Science and Technology **(ICMST-2012)**, St. Thomas College, Palai, Kottyam, India, 10-14 June 2012.

8. Vijay Kumar, **Manish Kumar** and G. Pugazhenthi, Kinetics of thermal degradation of PMMA/organoclay nanocomposites: Effect of nanoclay loading, International Conference on Process Engineering and Advanced Material **(ICPEAM-2012)**, Kuala Lumpur, Malaysia, 12-14 June 2012.

9. Vijay Kumar, **Manish Kumar** and G. Pugazhenthi, Effects of various solvents on thermal properties and thermal degradation kinetics of PMMA/organoclay nanocomposites prepared by solvent blending method, 64th Annual Meeting of Indian Institute of Chemical Engineers **(CHEMCON-2011)**, Banglore, India, 27-29 December 2011.

10. Kelothu Suresh, G. Saranya, M. Kaviya, S. Sowmiya, P. Abinaya Sri, **Manish Kumar**, Payal Sen, R. Anbarasan and G. Pugazhenthi, Effect of Co-Al LDH Loading on rheological behaviour of polyvinyl alcohol (PVA)/LDH solutions, 68th Annual Meeting of Indian Institute of Chemical Engineers **(CHEMCON-2015)**, IIT Guwahati, India, 27-30 December 2015.

11. Kelothu Suresh, **R. Vinoth Kumar**, Manish Kumar and G. Pugazhenthi, A study on thermal degradation kinetics of prepared PS/CoAl LDH nanocomposites by solvent blending technique, **The Annual Chemical Engineering Symposium - Reflux 2015,** Indian Institute of Technology Guwahati, Assam, India, 27-29 March 2015.

12. Kelothu Suresh, R. Vinoth Kumar, Rijumoni Boro, **Manish Kumar** and G. Pugazhenthi, Rheological behavior of polystyrene (PS)/Co-Al layered double hydroxide (LDH) blend solution obtained through solvent blending route: Influence of LDH loading and temperature, International Conference on Processing of Materials, Minerals and Energy **(PMME) - 2016,** PACE Institute of Technology and Sciences, Ongole, Andhra Pradesh, India, 29-30 July 2016.

13. Kelothu Suresh, Ritu Rajkumar Surin, **Manish Kumar**, R. Vinoth Kumar and G. Pugazhenthi, A simple sonication assisted solvent blending route for fabrication of exfoliated polystyrene (PS)/clay nanocomposites: Role of various clay modifiers, International Conference on Materials, Manufacturing and Modelling **(ICMMM-2017),** VIT-University, Vellore, Tamil Nadu, India, 9-11 March 2017.

14. **Manish Kumar**, Pradeep Upadhyaya, Vijai Kumar and D.D. Agarwal, Effect of maleic anhydride grafted ethylene propylene rubber on the properties of random polypropylene-copolymer/$CaCO_3$ nanocomposites, International Conference on Advancements in Polymeric Materials **(APM-2010)**, Bhubaneswar, India, 20-22 February 2010.

15. **Manish Kumar**, Pradeep Upadhyaya, Vijai Kumar and D.D. Agarwal, Studies on mechanical and thermal properties of maleic anhydride grafted ethylene propylene rubber modified PP-CP/$CaCO_3$ nanocomposites, National Conference on Frontiers in Polymer Nanocomposites and Composites **(FPNC-2010)**, Chennai, India, 18-19 March 2010.

M.Tech. Thesis Guided at CIPET Ahmedabad:

- Aayushi Dewanand Wawre
- Khyatiben Pankajkumar Parmar
- Prabhat Singh

Academic Achievements:

- **Post-doctoral Fellowship-2017** by **FCT**, **Fundação para a Ciência e Tecnologia** (Foundation for Science and Technology), **Portuga**l.
- **Young Scientist International Travel Grant Award-2015** (thrice) by Department of Science and Technology (DST), New Delhi to attend **AIChE Annual Meeting (AIChE-2015), Salt Lake City, USA.**
- Selected for **Travel Support** by The Centre for International Co-operation in Science **(CICS)**, Chennai to attend **Frontiers in Polymer Science-2015,** at **Riva Del Garda, Italy.**
- Received **MHRD Fellowship** during Ph.D. at IIT Guwahati, 2010 - 2015.
- Scored **Honors** in M.Tech.
- **Second prize** winner in Frontiers in Polymer Nanocomposites and Composites **(FPNC-2010)**, organized by B.S. Abdur Rahman University, Chennai.
- Qualified Graduate Aptitude Test, GATE-2009 in **Engineering Sciences** (AIR-322).

Professional Affiliation:

- Life Member, Society of Polymer Science India
- Member, American Institute of Chemical Engineers (AIChE), Membership No. 009901266005

Countries Visited:

USA, Portugal, Greece, France, Belgium, Czech Republic, Germany, Hungary, Italy, Poland, Spain, Switzerland, Netherlands.