Dr. Amit Kumar Pandey

Mobile: +91-9935461305
Email: amitpandey886@gmail.com

Professional Summary

Ph.D. in Biobased Materials Science with extensive experience in polymer synthesis, processing, and characterization. Expertise in developing and analyzing biobased and biodegradable polymers, with a strong focus on polymer performance, degradation, and advanced analytical techniques such as FT-IR, DSC, TGA, WAXS, and SAXS.

Currently a Guest Faculty at Harcourt Butler Technical University, Kanpur, with a solid background in teaching, and research.

Teaching Experience

22/09/2021—31/07/2023	Guest faculty, Department of Chemical Engineering, Harcourt Butler Technical University (HBTU) Kanpur, Uttar Pradesh
01/08/2024—Present	Guest faculty, Department of Chemical Engineering, Harcourt Butler Technical University (HBTU) Kanpur, Uttar Pradesh

Professional Experience

09/2019—12/2019	Postdoctoral Researcher (Temporary), Department of Biobased Materials Science, Kyoto Institute of Technology, Japan

Education

	Degree	Year	Subjects/Discipline	University/College	% of Marks
1.	Ph.D	2019	Biobased Materials Science	Kyoto Institute of Technology, Japan	N.A.
2.	M.Tech	2016	Chemical Engineering	IIT Guwahati	89.2%
3.	B.Tech.	2014	Chemical Engineering	Uttar Pradesh Technical University Lucknow	77.82%
4.	12th	2009	Mathematics	Uttar Pradesh Board	82.6%
5.	10th	2007	Science	Uttar Pradesh Board	71.7%

Research Experience

- **Kyoto Institute of Technology, Japan (Sept, 2016 – Sept, 2019)**

Ph.D. candidate; Advisor: Prof. Shinichi Sakurai

Dissertation: Studies on Enhancement in Crystallization Behavior of Poly(lactic acid) by Silk Fibroin Nanodisc

- **Indian Institute of Technology Guwahati, Assam (January, 2015 – July, 2016)**

M.Tech (Matster of Chemical Engineering) student; Advisor: Prof. Vimal Katiyar

Dissertation: Molecular Dynamics Simulation Study of Biodegradable Polymers/Cellulose Nanocrystals Based Nanocomposites

Research Areas

1. Development and characterization of polymer blends and nanocomposites for advanced applications in biomedical materials.
2. Processing and performance optimization of biobased and biodegradable polymers, with a focus on material properties relevant to food packaging applications.
3. Advanced characterization techniques for polymer blends and nanocomposites, including FT-IR, DSC, TGA, SAXS/WAXS, and other methods to assess material properties and degradation.
4. Small- and wide-angle X-ray scattering (SAXS/WAXS) of polymers to study structure-property relationships in polymeric materials, with applications in material functionality.

Skills and Techniques

- **Polymer Processing:** Twin-screw extrusion, Injection molding, Compression molding, Blown film extrusion, with a focus on optimizing material performance.
- **Characterization Techniques:** SAXS, WAXS, DSC, POM, TEM, FTIR, TGA, and Tensile testing to analyze polymer structure, properties, and degradation, relevant to pharmaceutical and biomedical applications.
- **Software:** Materials Studio for modeling and simulation, with experience in using advanced software for material property prediction and analysis.

Honors/Awards

- MEXT Scholarship from Ministry of Education, Culture, Sports, Science and Technology – Japan (April, 2017 – September, 2019).

- JASSO Merit Scholarship from Ministry of Education, Culture, Sports, Science and Technology – Japan (October, 2016 – March, 2017).
- Best poster award at Polymer Engineering and Science International (PESI) Conference 2019 at Yonezawa, Yamagata, Japan (September, 2019).
- Best presentation award for Young researcher in the annual meeting of the society of Rubber Science and Technology Japan (May, 2019).

Publications

1. Amit Kumar Pandey, Hideaki Takagi, Nobutaka Shimizu, Noriyuki Igarashi and Shinichi Sakurai; Enhanced formation of stereocomplex crystallites in Poly(l- lactic acid)/Poly(d-lactic acid) blends by silk fibroin nanodisc, ***Polymer*** 2021, 229, 124001.
2. Amit Kumar Pandey, Vimal Katiyar, Sono Sasaki and Shinichi Sakurai; Accelerated Crystallization of Poly(L-lactic acid) by Silk Fibroin Nanodisc, ***Polymer Journal*** 2019, 51(11), 1173.
3. Amit Kumar Pandey, Vimal Katiyar, Hideaki Takagi, Nobutaka Shimizu, Noriyuki Igarashi, Sono Sasaki and Shinichi Sakurai; Structural Evolution in Isothermal Crystallization Process of Poly(L-lactic acid) Enhanced by Silk Fibroin Nano-Disc, ***Materials*** 2019, 12(11), 1872.
4. Ranvijay Singh, Rajesh Katiyar, Amit Kumar Pandey, S.V.A.R Sastry; Development of a predictive model for determining mechanical properties of nano Al2O3 reinforced adhesive bonded SS304 single lap joint, ***Journal of Polymer & Composites*** 2022, 10(3), 6689.

Book Chapters

1. Amit Kumar Pandey, Pham Thi Ngoc Diep, Rahul Patwa, Vimal Katiyar, Sono Sasaki, Shinichi Sakurai; DSC and SWAXS Studies on the Effects of Silk Nanocrystals on Crystallization of Poly(L-Lactic Acid). ***Advances in Sustainable Polymers*** Springer Singapore 2020, 321-339.
2. Amit Kumar Pandey, Shinichi Sakurai; Recent Developments in the Crystallization of PLLA-Based Blends, Block Copolymers, and Nanocomposites. ***Crystallization and Applications*** (2021).

Presentations in International Conferences

1. Exclusive Stereocomplex Crystallization in Poly(L-lactic acid)/Poly(D-lactic acid) Blends in the Presence of Silk Fibroin Nanodisc, **5th International Symposium on Advances in Sustainable Polymers,** Oct 14-18, 2019 at Kyoto, Japan.
2. Isothermal crystallization of poly(L-lactic acid)/poly(D-lactic acid) blends induced by silk fibroin nanodisc, **Polymer Engineering and Science International (PESI) Conference 2019,** Sept 4-7, 2019 at Yonezawa, Yamagata, Japan.
3. Enhancement in Crystallization of Poly(L-lactic acid) by Silk Nanocrystal as Investigated by Synchrotron SAXS and WAXS, **The International Workshop for East Asian Young Rheologists (IWEAYR-14)**, Jan 23-26, 2019 at Nagoya, Japan.
4. Crystallization Kinetics of Silk Nanocrystals Reinforced Poly (L-lactic acid) Nanocomposites, **The International Polymer Conference (IPC2018)**, Dec 4-7, 2018 at Hiroshima, Japan.
5. DSC and Simultaneous SAXS/WAXS Studies on Crystallization of Poly (L-Lactic Acid) Based Nanocomposites, **7th Synchrotron Radiation in Polymer Science (SRPS 2018)**, Sept 4-7, 2018 at Gyeongju, South Korea.
6. Effects of a Biobased Filler on the Crystallization Behaviors of Poly (L-lactic Acid), **The Fiber Society's Spring 2018 Conference**, June 12-14, 2018 at Tokyo, Japan.
7. Molecular Modeling and Simulation of Biodegradable Polymer Nanocomposites, **IITG-KIT joint on Soft and Biobased Materials**, Aug 3, 2016 at Kyoto Japan.

Professional memberships : Student member of The Society of Polymer Science Japan (SPSJ) (October, 2016 – October 2019).