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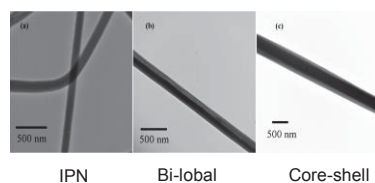
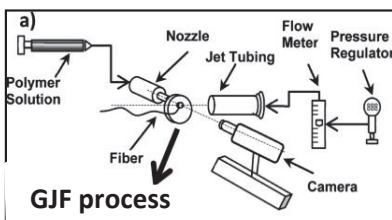
Biography: Sadhan Jana received his Ph.D. in Chemical Engineering from Northwestern University in 1993 and worked at GE Corporate Research before joining University of Akron in 1998. He served as chair of the Department of Polymer Engineering from 04 to 11.

Awards/Accomplishments:

- Distinguished Young Alumnus Award, University of Calcutta
- NSF CAREER award
- Chemcon Distinguished Speaker Award
- University of Akron Mentor of The Year Award (2005, 2007)
- Fellow and Honored Service Member of Society of Plastics Engineers (SPE)
- Fred E. Schwab Education Award of SPE
- Associate Editor of Polymer Engineering & Science
- W.C. Zekan Service Award
- Honorary Professor of National University of Colombia
- Editor-in-Chief, Polymer Section, Springer Materials.
- Editorial board members of five peer-reviewed journals.

Research Interests:

Our group specializes in synthesis and production of netshape silica and polymeric *aerogels* with targeted applications in air and water filtration, thermal insulation, and gas separation, *shape memory polymers*, scalable manufacturing of *nanofibers* from polymer solutions, polymer melt, and molten pitch using high throughput gas jet method, fluid mixing, and design of nanoscale reinforcement of polymers. The group recently invented a new method for high volume production of fluffy polymer nanofibers with unique morphological forms, such as bi-lobal, side-by-side, core-shell, and interpenetrating using various combination of hydrophobic and hydrophilic polymers, carbon nanotubes, and sol-gel precursors. The group is also evaluating rolling resistance of rubber compounds filled with hybrid fillers derived from lignin, carbon black, and silica.



Novel nanofiber morphology from polyvinylpyrrolidone and polyvinylacetate via differential solvent evaporation in GJM process.

Fiber Morphology
Shell Core
Polymer A B
Core and Shell
Side by side

Native silica aerogel
POSS-modified aerogel

Aerogel filter cartridge

Nanofibers by gas jet method. Uses high pressure gas to produce fibers with diameter as small as 40 nm.

POSS-modified silica aerogels – factor of 3 higher compressive modulus, negligible changes in density, and large reduction of polarity.

Capabilities: Laboratory scale chaotic mixers capable of evaluating blends and polymerization processes; Reactor-cum-supercritical dryer for synthesis of netshape aerogel articles; Lasercomp thermal conductivity testers for measurement of thermal conductivity in the range of 0.01 W/m-K to 10 W/m-K; Micromeritics BET surface area analyzers for meso- and micropores in aerogels; Helium pycnometer for measurement of skeletal density of porous materials; High intensity mixers; Home made instrument for measurement and analysis of rolling resistance; Single screw extruder for extrusion of mesopitch into nanofibers; GJM set up for high throughput production of fluffy polymer nanofibers of novel morphologies.

Selected Recent Publications:

1. Bahl, K., Miyoshi, T., Jana, S.C. Hybrid fillers for rubber compounds by non-covalent interactions between lignin and carbon black. *Polymer*, 55(16), 3825-3835 (2014).
2. Benavides, R., Jana, S.C.*, Reneker, D.H. Role of liquid jet stretching and bending instability in nanofiber formation by gas jet method. *Macromolecules*, 46, 6081-6090 (2013).
3. Wang, X., Jana, S.C. Synergistic hybrid organic-inorganic aerogels. *ACS Appl. Mater. Interfaces*, 5, 6423-6429 (2013).
4. Benavides, R., Jana, S.C.*, Reneker, D.H., Nanofibers from scalable gas jet process, *ACS Macro Letters*, 1, 1032-1036 (2012).
5. Duan, Y., Jana, S.C., Reinsel, A.M., Lama, B., Espe, M.P., Surface modification and reinforcement of silica aerogels using polyhedral oligomeric silsesquioxanes, *Langmuir*, 28, 15362-15371 (2012).
6. Roy, S., Lee, B.J., Kakish, Z.M., Jana, S.C., Exploiting sorbitol-POSS interactions: Issues of reinforcement of isotactic polypropylene spun fibers, *Macromolecules*, 45(5), 2420-2433 (2012).