

SADHAN C. JANA

CURRICULUM VITAE

PROFESSOR
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Naturalized US Citizen

Education

Ph.D., Chemical Engineering, Northwestern University, 1993.
M.Tech., Chemical Engineering, IIT- Kanpur, India, 1988.
B.Tech., Chemical Engineering, University of Calcutta, India, 1986.

Academic Positions

Nov., 2004 – Aug., 2011: Chair, Department of Polymer Engineering, University of Akron
July 2007-present: Professor, Department of Polymer Engineering, University of Akron
July 2004 – June 2007: Associate Professor, Department of Polymer Engineering, University of Akron
Aug. 1998 – July 2004: Assistant Professor, Department of Polymer Engineering, University of Akron
Fall 1994: Visiting Professor, Department of Chemical Engineering, City University of New York
Spring 1993: Instructor, Department of Chemical Engineering, Northwestern University.

Research Positions

May 31-August 05, 2005: NASA Summer Faculty Fellow, NASA Glenn Research Center, Cleveland.
June 14-August 20, 1999: NASA/OAI Summer Faculty Fellow, NASA Glenn Research Center, Cleveland
December 1994-July 1998: Senior Chemical Engineer, GE Corporate Res. & Dev., Schenectady, NY.
August 1993 – Dec. 1994: Post-doctoral Fellow, Levich Institute, CUNY, New York
June 1991 – July 1993: Research Assistant, Dept. of Chemical Engineering, Northwestern University.
August 1988- June 1991: Research Assistant, Dept. of Chemical Engineering, UMass-Amherst.

Administrative Experience

Department Chair, Department of Polymer Engineering (2004 – 2011); Chair, New Technology Committee, Society of Plastics Engineers (2011-2013); Chair, Education Award Committee, Society of Plastics Engineers (2011-2012); Chair, Co-operative Research Award Committee, Polymer Materials Science and Engineering Division, American Chemical Society (2011-2013);; Chair, Board of Directors, Engineering Properties and Structures Division, Society of Plastics Engineers (2009-2010); Chair, National Polymer Innovation Center Building Committee (2007-2010); Chair and Chair-elect, Board of Directors, Engineering Properties and Structures Division, Society of Plastics Engineers (2008-2009; 2009-2010); Chair of Graduate Admission Committee (2002-2004), Department of Polymer Engineering, University of Akron; Chair, Awards Committee, Engineering Properties and Structures Division, Society of Plastics Engineers (2005-2008). Vice Chair, New Technology Committee, Society of Plastics Engineers (2009-2010).

Editorial Activities

Associate Editor, Polymer Engineering & Science, Society of Plastics Engineers journal, published by Wiley.
Editorial Board, International Journal of Polymer Science
Editorial Board, Journal of Plastic Film & Sheeting
Review Board, Materials and Manufacturing Processes
Editor (G. Mago, D. Kalyon, and F. Fisher coeditors) Polymer Nanocomposite Processing, Characterization, and Applications, special issue, published by Journal of Nanomaterials, 2010.
Editor (G. Mago, and D. Kalyon coeditors), Polymer Nanocomposite Processing, Characterization, and Applications, special issue, to be published by Journal of Nanomaterials, 2012.
Editor (Jie Feng coeditor) Biocomposites: Mechanical Properties and Biomedical Applications to be published by CRC Press, a Taylor and Francis Company
Editor (R. Gupta and A. Ray coeditors), Polymer Engineering & Science, October 2011 special issue in honor of Santosh K. Gupta.

Biographical Listing

WHO'S WHO in America
WHO'S WHO in the World
WHO'S WHO in American Education
WHO'S WHO in Science and Engineering
WHO'S WHO in Plastics and Polymers

Awards and Honors

2011 William C. Zekan Memorial Award, Akron Section, Society of Plastics Engineers
2011 Excellence in Education, featured in December 2011 issue of Ohio Magazine.
Honorary Professor, Department of Chemical Engineering, National University of Colombia, Bogota, September 2010.
2010 Education Award, Society of Plastics Engineers
Elected Fellow, Society of Plastics Engineers, May 2008
Mentor of the Year Award, University of Akron, 2007
Perkin Elmer Award (with graduate student S. Gunes), Composites Division, Society of Plastics Engineers ANTEC 2006
CHEMCON Distinguished Speaker Award, Indian Institute of Chemical Engineers, IIT Delhi, India, 2005
CNR Rao Medal, CHEMCON 2005, Indian Institute of Chemical Engineers, IIT Delhi, India, 2005
Mentor of the Year Award, University of Akron, 2005
Best Paper Award, Composites Division, Society of Plastics Engineers ANTEC 2005.
Board Member, Engineering Properties Division (EPSDIV), Society of Plastics Engineers, 2005 – present.
Member, Committee on New Technology, Society of Plastics Engineers, 2007 – present
NASA Summer Faculty Fellow, NASA Glenn Research Center, 1999, 2005.
CAREER Award, National Science Foundation (2002)
Distinguished Young Alumnus Award, University of Calcutta (2001)
Gold Medal, University of Calcutta (1986).
National Merit Scholar-Government of India (1977).

Organizing Activities at National and International Conferences

Chair of 30th Polymer Processing Society Annual Meeting (PPS-30), Cleveland, scheduled in June 2014.
Session Organizer and Session Chair (with D. Lacks), Rheology of Solids, Glasses and Composites, 83rd Society of Rheology Meeting, October 9-13, 2011, Cleveland, Ohio.
Session Organizer and Session Chair (with A. Ray), In Honor of Santosh K. Gupta, AIChE Annual Meeting, October 16-21, 2011, Minneapolis, MN.

Member, Technical Program Committee, New Technology Forum, Society of Plastics Engineers, ANTEC 2012.

Member, Technical Program Committee, New Technology Forum, Society of Plastics Engineers, ANTEC 2011.

Member, Technical Program Committee, New Technology Forum, Society of Plastics Engineers, ANTEC 2010.

Session Organizer and Chair, In Memory of James L. White, 26th Polymer Processing Society Meeting, Banff, Canada, July 4-8, 2010.

Session Organizer and Chair, In Honor of James L. White, 25th Polymer Processing Society Meeting, Goa, India, March 1-5, 2009.

Member, Technical Program Committee, New Technology Symposium, Society of Plastics Engineers, Philadelphia, November 4-6, 2008.

Member, Technical Program Committee, Engineering Properties and Structures Division, Society of Plastics Engineers Annual Technical Conference (SPE ANTEC) 2008, Milwaukee, WI.

Organizer, NANOCOMPOSITES 2008, San Diego, 2008.

Member, Technical Program Committee, Engineering Properties and Structures Division, Society of Plastics Engineers Annual Technical Conference (SPE ANTEC) 2007, Cincinnati, OH.

Co-organizer, Symposium on Mixing and Compounding, PPS-23, Sao Paulo, Brazil, 2007

Member, Committee on Topical Conferences (TOPCON), Engineering Properties and Structures Division, Society of Plastics Engineers, 2005-present.

Organizer, NANOCOMPOSITES 2007, Las Vegas, 2007.

Member, Technical Program Committee, Engineering Properties and Structures Division, ANTEC 2006, Charlotte, NC.

Organizer, NANOCOMPOSITES 2006, Chicago, 2006.

Session Chair on Polymer Nanocomposites, SPE ANTEC 2006.

Chair, Technical Program Committee, Engineering Properties Division (EPSDIV), SPE ANTEC 2005.

Organizer, Novel Manufacturing Methods, NANOCOMPOSITES 2005, San Francisco, 2005.

Co-organizer, Symposium on Mixing and Compounding, PPS Regional Meeting, Quebec, August 15-17, 2005.

Organizer, Novel Manufacturing Methods, NANOCOMPOSITES 2004, San Francisco, 2004.

Chair, Technical Program Committee, 20th Annual Conference of Polymer Processing Society (PPS-20), Akron, OH (June 20-24, 2004).

Co-organizer, Symposium on Blending and Compounding, PPS-19, 2003

Chair, session on Polypropylene Nanocomposites, SPE ANTEC 2003.

Organizer, Novel Manufacturing Methods, NANOCOMPOSITES 2003, San Francisco, 2003.

Co-organizer and co-session chair, Chaotic Mixing, SPE ANTEC 2002.

Membership in Professional Societies

American Association for the Advancement of Science, The New York Academy of Sciences, Society of Rheology, Society of Plastics Engineers, Polymer Processing Society, American Chemical Society, American Institute of Chemical Engineers.

Technical Journal Peer-Review Activities

Advanced Materials; AIChE Journal; Biomacromolecules; Biomaterials; Chemical Engineering Communications; Chemical Engineering and Science; Chaos; Colloids and Surface Science; Composites Science and Technology; Computers and Chemical Engineering; European Polymer Journal; Fluid Dynamics Research; International Polymer Processing; Journal of Applied Polymer Science; Journal of Polymer Science: Part B: Physics; Journal of Engineering Mathematics; Journal of Fluid Mechanics; Journal of Fluids Engineering; Journal of Heat Transfer; Journal of Materials in Civil Engineering; Journal of Materials Science; Journal of Polymer Engineering; Journal of Rheology; Journal of Thermoplastic Composite Materials; Langmuir; Macromolecular Materials and Engineering; Macromolecular Science and

Engineering; Macromolecules; Physics of Fluids; Polymer Engineering and Science; Polymer; Polymers and Polymer Composites; Proceedings of the Royal Society of London, Series A; ZAMP

Ph.D. Thesis Examiner of Overseas Universities

University of New South Wales, Australia
Indian Institute of Technology, Delhi, India
Indian Institute of Technology, Guwahati, India
Indian Institute of Technology, Kanpur, India
Indian Institute of Technology, Kharagpur, India
Indian Institute of Technology, Mumbai, India
Royal Melbourne Institute of Technology, Melbourne, Australia
University of Calcutta, Calcutta, India
U.P. Technical University, India
Thapar University, Patiala, India

Proposal and Panel Review Activities

National Science Foundation (Materials Processing and Manufacturing, Nanomanufacturing, Chemical Transport System, Division of Materials Research)
U.S. Department of Agriculture
American Chemical Society Petroleum Research Fund
National Science and Engineering Research Council (Canada)
NASA
KACST, Kingdom of Saudi Arabia (performed through AAAS)
Kuwait Research Foundation

Invited Talks at International Conferences:

1. Jana, S.C., Roy, S., Duan, Y., Benavides, R., Wang, X. *Design of nanoreinforcements by engineering at nanoscale*. Keynote address at International Conference on Nanoscience and Technology (ICONSAT-2012) held during January 20-23, 2012 at Hyderabad, India.
2. Gunes, S., Jimenez, G., Cao, F., Jana, S.C. *Shape memory polymer nanocomposites research and applications*. Invited talk, Session: A-15.6, CIMTEC 2012 - 4th International Conference on Smart Materials, Structures, and Systems to be held in Montecatini Terme, Italy, on June 10-14, 2012.
3. Jana, S.C., Gunes, S., Cao, F., Bahl, K., Nanocomposites of rubbery polymers: An engineer's views. International Rubber Conference 2012(IRC 2012) to be held on May 21-24, 2012 in Jeju, Korea.
4. Roy, S., Jana, S.C. *Challenges and opportunities in design of nanocomposites of polyolefins*. Keynote address. The 27th Annual Meeting of The Polymer Processing Society, May 10-14, 2011, Marrakech, Morocco.
5. Jans, S.C. *Challenges and opportunities in design of nanocomposites of polyolefins*. Plenary talk. RubberPLAS 2010: The Challenges of Leadership Towards 2015. September 9-11, 2010, Impact Exhibition & Convention Center, Bangkok, Thailand.

6. Jans, S.C. *Shape memory polymers: A review of recent progress*. Plenary talk. RubberPLAS 2010: The Challenges of Leadership Towards 2015. September 9-11, 2010, Impact Exhibition & Convention Center, Bangkok, Thailand.
7. Jana, S.C., Lee, B.J., Roy, S. *Nucleating agent assisted dispersion of POSS in PP: Properties of nanocomposite fibers and films*. Keynote address, Session G03-Polymer Nanocomposites, Polymer Processing Society, PPS-26, Banff, Canada, July 4-8, 2010.
8. Jana, S.C., Gunes, I.S., Lee, B.J., Roy, S. *Non-covalent interactions: Effects on shape memory properties and properties of spun fibers*. Invited talk at PP'2010, International Symposium on Polymer Physics, Ji'nan, Shan Dong, Peoples Republic of China, June 6-10, 2010.
9. Jana, S.C., *Recent developments in shape memory polymers and their nanocomposites*. RGJ-Ph.D. Congress XI, Pataya, Thailand, April 1-3, 2010.
10. Jana, S.C., *Nanocomposites of rubbery polymers: An engineer's view*. Invited lecture, IRE09, International Conference, Calcutta, January 28-31, 2009.
11. Jana, S.C., Gunes, I.S., Cao, F., *Shape memory polymer nanocomposites*. Invited lecture, UKC2008, US-Korea Conference on Science, Technology, and Entrepreneurship, San Diego, August 14-17, 2008.
12. Jana, S.C., *Rheology as a tool for elucidation of properties of polymer nanocomposites*. Invited lecture, RheoProcessing 2008, Guimaraes, Portugal, June 12-14, 2008.
13. Jana, S.C., *Shape memory thermoplastic elastomers and their nanocomposites*. Plenary lecture, Chemtech 2007, International Conference, Institute of Chemistry, Ceylone, Sri Lanka, June 20-23, 2007.
14. Jana, S.C., *Light weight polymers and polymer composites in fuel cell applications: Challenges and state of the art*. International Conference on Polymeric Materials in Power Engineering, ICPMPE, Bangalore, India, October 4-6, 2007.
15. Jana, S.C., Dharaiya, D., Opalko, R., *Studies on the mechanisms of nanoparticle-induced morphology development in immiscible polymer systems*. Invited keynote lecture. 23rd Annual Meeting of the Polymer Processing Society (PPS-23), Salvador, Brazil, May 28-31, 2007.
16. Jana, S.C., *Chemical and engineering issues in polymer nanocomposites research and product design*. Invited Lecture, 58th Annual Congress of Indian Chemical Engineering, CHEMCON-2005 at Indian Institute of Technology Delhi, December 14-17, 2005.
17. Jana, S.C., *Applications of chaos and dynamical systems theory in polymer mixing*, Forefront of Nonlinear Science and Its Application to Materials Science in the 21st Century (Perspectives of Nonlinear Science in Materials Research, MATNON'05, Japan Society of Polymer Science, Kyoto Institute of Technology, Kyoto, September 28-30, 2005).
18. Jana, S.C., *Chemical and engineering issues of polymer nanocomposites synthesis and processing*, 23rd Colombian Chemical Engineering Congress, Manizales, Colombia, August 24-26, 2005.
19. Jana, S.C., *Doing things right with chaotic mixing*, Keynote lecture, Polymer Processing Society (PPS) Regional Meeting, Quebec, August 15-17, 2005.

20. Jana, S.C., *Evaluation of synthesis methods of nanocomposites of epoxies, polyimides, and polyurethanes with layered silicate clay*, International Workshop on Polymer Nanocomposites-Recent Developments and Applications, May 23-25, 2005, Melbourne, Australia.
21. Jana, S.C. 2002 *Chaotic mixing: A new technology for polymer blending*. Presented at MACRO-2002 of Indian Society of Polymer Science, Kharagpur (India), December 9-11, 2002.

Invited Talks at National Conferences and Symposiums:

1. Jana, S.C., Jung, C.D. *Exploiting chaos: Should polymerization reactors be chaotic?* Invited talk at Engineering Properties and Structure Division session in memory of Kyonsuku Min Cakmak, SPE Annual Technical Conference, April 2-4, 2012, Orlando, Florida.
2. Wang, X., Jana, S.C. *Structure and surface modifications of syndiotactic polystyrene aerogels by incorporation of nanoparticles, nanotubes, and immiscible polymers*. Invited talk at session Advances in Polymer Composites, Division of Polymer Chemistry, 242nd ACS National Meeting, Denver, Colorado, August 28 – September 1, 2011.
3. Jana, S.C., Gunes, S., Lee, B.J., Roy, S. *Analysis of non-covalent interactions between the nanoparticulate fillers and the matrix polymer as applied to shape memory performance and spun fiber properties*. 177th Spring Meeting of ACS Rubber Division, Akron, OH, April 26-28, 2010.
4. Jana, S.C., Gunes, I.S. *Effects of nanofiller dispersion and polymer morphology on shape memory properties of polyurethanes and their shape memory actuation by resistive heating*. Invited talk, Paper# 1287698, 238th ACS National Meeting, Washington, DC, August 16-20, 2009.
5. Jana, S.C., *Rheology as a tool for elucidation of properties of nanocomposites*. Keynote address, ANTEC 2009, Chicago, June 22-24, 2009.
6. Jana, S.C., *Fifteen years of nanocomposites research: What is novel about nanoparticles and manufacturing methods*. Plenary Talk, Nanocomposites 2008, San Diego, September 15-17, 2008.
7. Jana, S.C., *Shape memory polymer nanocomposites*. Invited talk at NSTI Nanotech 2008, June 1-5, 2008, Boston.
8. Jana, S.C., Jung C.D., *Exploiting chaos: Should polymerization reactors be chaotic?* Invited talk on Nonlinear Dynamics in Polymeric Systems, 2008 Spring National Meeting of the American Chemical Society, April 6-10, 2008, New Orleans.
9. Jana, S.C., *Shape memory polymer nanocomposites actuated by resistive heating*, Materials Science & Technology 2007 Conference and Exhibit (MS&T '07), September 16-20, 2007, Detroit, Michigan.
10. Jana, S.C., *Polymer nanocomposites for shape-memory applications*. Invited talk. The 171st ACS Rubber Division Technical Meeting, Akron, Ohio, April 30-May 2, 2007.
11. Jana, S.C., *Polymer nanocomposites by filler-polymer reactions*, 50th Anniversary Symposium of University of Dayton Research Institute (UDRI) held in Dayton, OH, September 13-14, 2006.

12. Jana, S.C., *Polymer nanocomposites design by clay-polymer tethering and novel blending*. Presented at Gordon Research Conference on Composites (Chair: Prof. Alan Lesser), Ventura, CA, January 15-20, 2006.
13. Jana, S.C., *Mechanism of exfoliation of nanoclays in thermosetting polymer systems*. 27th Asilomar Conference on Polymeric Materials (Chair: Prof. Eric Baer), February 8-11, 2004, Asilomar State Park, Pacific Grove, CA.
14. Jana, S.C., 2001 *Issues of dispersion of nanofillers in thermoplastic and thermosetting polymer systems*. Presented at *Nanocomposites 2001: The Path to Commercialization* (Chair: Prof. G. Beal), Baltimore, June 4-5.
15. Jana, S.C., Prieto, A. 2001 *Natural fiber reinforcement of polymeric composites by reaction-induced phase separation*. Presented at 222nd ACS National Meeting, Chicago, August 26-30.
16. Jana, S.C., Patel, N. 2000 *Reactive Compatibilization of PBT-PPO Systems Using Low Molecular Weight Epoxies*. Presented at PACIFICHEM 2000 at Honolulu, Hawaii, December 16, 2000.

Invited talks at Institutes and Universities:

3M Center, Minneapolis, MN
 Advanced Elastomer Systems
 Akron Physics Club
 Bayer MaterialScience, Leverkusen, Germany
 Bayer MaterialScience, Pittsburgh
 Department of Mechanical Engineering, Texas A&M University, College Station, TX
 Department of Chemical Engineering, University of Dayton
 Department of Chemical Engineering, University of Oklahoma,
 Department of Chemical Engineering, Wayne State University
 Department of Chemical Engineering, West Virginia University
 Department of Macromolecular Science and Engineering, Case Western Reserve University
 Department of Chemical Engineering, University of South Carolina
 Dow Chemical Company, Freeport, TX
 GE Corporate Research & Development, Schenectady, New York
 GE Plastics, Mt. Vernon, Indiana
 GE Global Research Center, Bangalore, India
 Lubrizol, Brecksville, OH
 Reliance Industries Limited, Mumbai, India
 Levich Institute of Physico-chemical Hydrodynamics, CUNY
 NASA Glenn Research Center, Cleveland

Books and Book Chapter

- Feng, J., Jana, S.C. (Editors), “Biocomposites: Mechanical Properties and Biomedical Applications.” CRC Press. In preparation.
- Jana, S.C., Du, L. “Highly-filled graphite-polymer composites: Synthesis, processing, and characterization.” In *Graphene and Graphene-Based Nanocomposites*, Prithu Mukhopadhyay and Rakesh Gupta (Ed.), Taylor and Francis. In press.

- Jimenez, G.A., Lee, B.J., Jana, S.C., “Nanoparticles and Polymer Nanocomposites” Chapter 4 in *Nanoscale Multifunctional Materials: Science and Applications*, Sharmila Mukhopadhyay (Ed.), Wiley, ISBN: 978-0-470-50891-6, October 2011.
- Gunes, I.S., Jana, S.C., “Chemical and Engineering Aspects of Morphology Development and Processing of Multiphase Polymer Blend Nanocomposites” Chapter 8 in *Encyclopedia of Polymer Blends*, Volume 2, Avraam Isayev (Ed.), Wiley-VCH Publishers, ISBN: 978-3-527-31930-5, November 2011.
- Gunes, I.S., Jana, S.C., “Biomedical applications of shape memory polymers and their nanocomposites”, in *Polymeric Biomaterials, Vol II: Medicinal and Pharmaceutical Applications of Polymers*, Dumitriu, S. (Ed.), CRC Press, 2011 (in press).
- Gunes, I.S., Jung, C.D., Jana, S.C., “Evolution of non-linear rheology and network formation during thermoplastic polyurethane polymerization and its relationship to reaction kinetics, phase separation, and mixing”, Ch. 3 in “Non-linear Dynamics with Polymers”, Pojman, J., Miyata, Q.T. (Ed.), Wiley-VCH, Weinheim, ISBN-10: 3-527-32529-8, October 2010.
- Gunes, I. S., Jana, S.C., “Permeability and Water Uptake Actuation of Shape Memory Polyurethane Nanocomposites: Materials, Processing, Modeling, and Applications”, pp. 41-72, Chapter 3 in *Barrier Properties of Polymer Clay Nanocomposites*, ISBN: 978-1-60876-021-3, V. Mittal (Ed), Nova Science Publishers, 2010.
- Gunes, I.S., Jana, S.C., “Shape Memory Polymers and Their Nanocomposites” In: Kar KK, editor. *Advanced Composites*, Singapore: Pan Stanford Publishing, 2011 (Chapter 1) (in press).
- Jana, S.C., “Clay Nanocomposites Of Polyurethanes And Epoxies: Preparation Methods And Properties”, Chapter 9 in *Processing and Properties of Nanocomposites*, ISBN 978-981-270-390-3, Advani, S.G. (Ed), World Scientific, Published December 2006.

Publications in Refereed Journals

ISI citations~1760, H-index: 25, Average citations per article: 28. As of January 16, 2012

1. Roy, S., Lee, B.J., Kakish, Z.M., Jana, S.C. 2012 Exploiting sorbitol-POSS interactions: Issues of reinforcement of isotactic polypropylene spun fibers. *Macromolecules*, 45(5), 2420-2433.
2. Roy, S., Feng, J., Scionti, V., Jana, S.C., Wesdemiotis, C. 2012 Self-assembled structure formation from interactions between polyhedral oligomeric silsesquioxane and sorbitol in preparation of polymer compounds. *Polymer*, 53, 1711-1724.
3. Pisitsak, P., Magaraphan, R., Jana, S.C. 2011 Electrically conductive compounds of polycarbonate, liquid crystalline polymer, and multi-walled carbon nanotubes. In revision. *J. Appl. Polym. Sci.*
4. Roy, S., Scionti, V., Jana, S. C*., Wesdemiotis, C., Pischera, A.M., Espe, M. P. 2011 Sorbitol–POSS interactions on development of isotactic polypropylene composites. *Macromolecules*, 44, 8064–8079.

5. Gunes, I.S., Pérez-Bolívar, C., Jimenez, G. A., Celikbicak, O., Li, F., Anzenbacher, P., Wesdemiotis, C., Jana, S.C.* 2011 Analysis of energy transfer and ternary non-covalent filler/matrix/UV stabilizer interactions in carbon nanofiber and oxidized carbon nanofiber filled poly(methyl methacrylate) composites. *Polymer*, 52, 5355-5361.
6. Randall, J. P., Meador, M. A. B., Jana, S. C*. 2011 Tailoring mechanical properties of aerogels for aerospace applications. *ACS Appl. Mater. Interfaces*, 3, 613-626.
7. Perilla, J.E., Lee, B.J., Jana, S.C*. 2010 Rheological investigation of interactions between sorbitol and polyhedral oligomeric silsesquioxane in development of nanocomposites of isotactic polypropylene. *J. Rheol*, 54(4), 761-779.
8. Gunes, I. S., Perez-Bolivar, C. A., Cao, F., Jimenez, G. A., Anzenbacher, P., Jana, S.C.*, 2010 Analysis of non-covalent interactions between the nanoparticulate fillers and the matrix polymer as applied to shape memory performance. *J. Mater. Chem.*, 20, 3467-3474. **(6 citations)**
9. Jimenez, G., Jana, S.C. 2009 Composites of carbon nanofibers and thermoplastic polyurethanes with shape memory properties prepared by chaotic mixing. *Polym. Eng. Sci.* 49(10), 2020-2030. **(7 citations)**
10. Ertekin, A., Jana, S.C., Thomas, R., 2009 An investigation on the capillary wetting of glass fiber tow and fabric structures with nanoclay-enriched reactive epoxy and silicone oil mixtures. *ACS Appl. Mater. Interfaces*, 1 (8), 1662-1671.
11. Gunes, I.S., Jimenez, G., Jana, S.C. 2009 Carbonaceous fillers for shape memory actuation of polyurethane composites by resistive heating. *Carbon*, 47, 981-997. **(22 citations)**
12. Du, L., Jana, S.C. 2008 Hygrothermal Effects on Properties of Highly Conductive Epoxy/Graphite Composites for applications as bipolar plates. *J. Power Sources*, 182, 223–229. **(11 citations)**
13. Gunes, I.S., Cao, F., Jana, S.C. 2008 Effect of thermal expansion on shape memory behavior of polyurethane and its nanocomposites. *J. Polym. Sci., Part B: Physics*, 46, 1437–1449. **(13 citations)**
14. Gunes, I.S., Cao, F., Jimenez, G., Jana, S.C. 2008 Evaluation of nanoparticulate fillers for development of shape memory polymer nanocomposites. *Polymer*, 49, 2223–2234. **(39 citations)**
15. Gunes, S., Jana, S.C., 2008 Shape memory polymers and their nanocomposites: A review of science and technology of new multifunctional materials. *J. Nanosci. Nanotech.* 8, 1616-1637. **(47 citations)**
16. Gintert, M., Jana, S.C., Miller, S. 2007 On optimum organic treatment of nanoclay for PMR-15 nanocomposites, *Polymer*, 48, 7573-7581.
17. Du, L., Jana, S.C. 2007 Highly conductive epoxy/graphite composites for bipolar plates in proton exchange membrane fuel cells. *Journal of Power Sources*, 172, 734-741. **(31 citations)**
18. Jimenez, G., Jana, S.C., 2007 Polymer composites of oxidized carbon nanofibers prepared by chaotic mixing. *Carbon* 45(10), 2079-2091. **(22 citations)**

19. Gintert, M., Jana, S.C., Miller, S. 2007 A novel strategy for nanoclay exfoliation in thermoset polyimide nanocomposite systems. *Polymer*, 48, 4166-4173. **(16 citations)**
20. Jimenez, G., Jana, S.C., 2007 Electrically conductive polymer nanocomposites of polymethylmethacrylate and carbon nanofibers prepared by chaotic mixing. *Composites Part A: Appl. Sci. Manu.*, 38, 983-993. **(25 citations)**
21. Jung, C.D., Gunes, I.S., Jana, S.C., 2007 Analysis of polymerization in chaotic mixers using time scales of mixing and chemical reactions. *Ind. Eng. Chem. Res.*, 46, 2413-2422. **(7 citations)**
22. Cao, F., Jana, S.C., 2007 Nanoclay-tethered shape memory polyurethane nanocomposites. *Polymer*, 48(13), 3790-3800. **(41 citations)**
23. Dharaiya, D., Jana, S.C., Lyuksyutov, S. 2006 Production of electrically conductive networks in immiscible polymer blends by chaotic mixing. *Polym. Eng. Sci.*, 46 (1), 19-28. **(11 citations)**
24. Dharaiya, D., Jana, S.C., 2005 Thermal decomposition of alkyl ammonium ions and its effects on surface polarity of organically treated nanoclay. *Polymer*, 46(23), 10139-10147. **(30 citations)**
25. Dharaiya, D., Jana, S.C., 2005 Nanoclay-induced morphology development in chaotic mixing of immiscible polymers. *J. Polym. Sci., Part B: Physics*, 43(24), 3638-3651. **(20 citations)**
26. Perilla, J., Jana, S.C., 2005 Coalescence of immiscible polymer blends in chaotic mixers. *AIChE J.*, 51(10), 2675-2685. **(7 citations)**
27. Pattanayak, A., Jana, S.C., 2005 Thermoplastic polyurethane nanocomposites of reactive silicate clays: Effects of soft segments on properties. *Polymer*, 46(14), 5183-5193. **(60 citations)**
28. Pattanayak, A., Jana, S.C., 2005 High strength and low stiffness composites of nanoclay-filled thermoplastic polyurethanes. *Polym. Eng. Sci.*, 45(11), 1532-1539. **(19 citations)**
29. Pattanayak, A., Jana, S.C., 2005 Properties of bulk-polymerized thermoplastic polyurethane nanocomposites. *Polymer*, 46(10), 3394-3406. **(67 citations)**
30. Pattanayak, A., Jana, S.C., 2005 Synthesis of thermoplastic polyurethane nanocomposites of reactive clay by bulk polymerization methods. *Polymer*, 46(10), 3275-3288. **(71 citations)**
31. Park, J.H., Jana, S.C., 2004 Adverse effects of thermal dissociation of quaternary ammonium ions on nanoclay exfoliation in epoxy-clay systems. *Polymer*, 45(22), 7673-7679. **(37 citations)**
32. Perilla, J., Jana, S.C., 2004 A time-scale approach for analysis of coalescence in polymer processing flows. *Polym. Eng. Sci.*, 44(12), 2254-2265. **(6 citations)**
33. Hong, C.M., Kim, D.J., Jana, S.C. 2004 Shear-induced migration of conductive fillers in injection molding. *Polym. Eng. Sci.*, 44 (11), 2101-2109. **(9 citations)**
34. Jana, S.C., Sau, M. 2004 Effects of viscosity ratio and composition on development of morphology in chaotic mixing of polymers. *Polymer*, 45(5), 1665-1678. **(28 citations)**

35. Sau, M., Jana, S.C. 2004 Effect of waveforms on morphology development in chaotic mixing of polymers. *AIChE J.*, 50(10), 2346-2358. **(10 citations)**
36. Sau, M., Jana, S.C. 2004 A study on the effects of chaotic mixer design and operating conditions on morphology development in immiscible polymer systems. *Polym. Eng. Sci.*, **44**(3), 407-422. **Errata** "A study on the effects of chaotic mixer design and operating conditions on morphology development in immiscible polymer systems". *Polym. Eng. Sci.*, **44**(7), 1403. **(14 citations)**
37. Park, J.H., Jana, S.C. 2003 Effect of plasticization of epoxy networks by organic modifier on exfoliation of nanoclay. *Macromolecules*, **36**, 8391-8397. **(61 citations)**
38. Park, J.H., Jana, S.C., 2003 Mechanism of exfoliation of nanoclay particles in epoxy-clay nanocomposites. *Macromolecules*, **36**(8), 2758-2768. **(137 citations)**
39. Jana, S.C., 2003 Chaotic mixing: a new technology for polymer blending. *Int. J. Plastics Tech. (India)*, **6**(1), 88-92.
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Papers presented at conferences

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1. Gunes, I.S., Jimenez, G.A., Perez-Bolivar, C., Celikbicak, O., Anzenbacher, P., Wesdemiotis, C., Jana, S.C. Non-covalent filler-matrix interactions in poly(methyl methacrylate)/carbon nanofiber nanocomposites. Paper No. 340, Session T13, SPE ANTEC, May 16-20, 2010, Orlando.
2. Gunes, I.S., Jana, S.C. Thermodynamic analysis of shape memory properties of polymers and nanocomposites. Paper No. 420, Session T21, SPE ANTEC, May 16-20, 2010, Orlando.
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6. Duan, Y., Randall, J., Jana, S.C., Effect of phenyl TPOSS and epoxy-POSS on mechanical and surface properties of TEOS and TEOS/APTES-based aerogels. Paper no. G02-210, Session G02, PPS-26, Banff, Canada, July 4-8, 2010.
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13. Lee, B.J., Jana, S.C., Reinforcement of polyolefins by bottom-up self-assembly of POSS nanoparticles. Presented at Americas Regional Meeting, Polymer Processing Society, Charleston, SC, October 26-29, 2008.
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15. Randall, J.P., Meador, M.A.B., Jana, S.C., Evaluating dimethyldiethoxysilane in polyurethane crosslinked silica aerogels. Paper no. 450. 236th ACS National Meeting, Philadelphia, August 17-21, 2008.
16. Cao, F., Jana, S.C. Evaluation of shape memory properties of polyurethane nanocomposites with high hard segment content. Paper No. 140, Session M4, SPE ANTEC, May 4-8, 2008, Milwaukee.
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21. Jimenez, G.A., Jana, S.C. Dispersion of functionalized carbon nanofibers in thermoplastic polyurethanes. Paper No. 712, Session W20, SPE ANTEC, May 4-8, 2008, Milwaukee.
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80. Sau, M., Jana, S.C. 2002 Morphology development in the blending of polypropylene (PP) and polyamide 6 (PA6) under chaotic mixing conditions. PPS-18, June 16-20, Guimaraes, Portugal.
81. Park, J.H., Jana, S.C. 2002 Issues of dispersion of layered silicate nanoparticles in thermosetting epoxies. PPS-18, June 16-20, Guimaraes, Portugal.
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84. Sau, M., Jana, S.C., 2002 Blending of immiscible polymer systems by chaotic mixing. Paper no. 179 Presented at ANTEC 2002, San Francisco, May 5-9.
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86. Sau, M., Jana, S.C. 2002 Morphology development in immiscible polymer systems by baker's cut. Paper no. 178 presented at ANTEC 2002, San Francisco, May 5-9.
87. Prieto, A., Jana, S.C. 2002 Natural-fiber composites of high performance thermoplastic polymers. Paper no. 182 presented at ANTEC 2002, San Francisco, May 5-9.
88. Dharaia, D., Jana, S.C. 2002 Ternary blends of phenoxy resins with polyamides and polyesters. Paper no. 181 presented at ANTEC 2002, San Francisco, May 5-9.
89. Hong, C.M., Jana, S.C. 2002 Effects of conductive particles on the strength of adhesion between conductive and non-conductive polymer compounds. Paper no. 175 presented at ANTEC 2002, San Francisco, May 5-9.
90. Jana, S.C., Doni, S. 2001 On the effects of migration of filler particles on conductivity and mechanical properties. Paper no. 120 presented at ANTEC 2001, Dallas, May 6-10.
91. Jana, S.C., Jain, S. 2001 Dispersion of nanoparticles in high performance polymers using thermosetting resins. Paper no. 119 presented at ANTEC 2001, Dallas, May 6-10.
92. Hong, C.M., Jana, S.C. 2001 Effects of filler migration on mechanical properties and surface and volume conductivity of filled polymer compounds. Presented at PPS-17, Montreal, May 21-14.
93. Prieto, A., Jana, S.C., 2001 Natural-Fiber Composites of High Temperature Thermoplastic Polymers by Reactive Processing. Presented at PPS-17, Montreal, May 21-14.
94. Chandra, A., Jana, S.C. 2001 Composites of thermoplastic-thermosetting polymers by reactive processing. Presented at PPS-17, Montreal, May 21-14.
95. Jana, S.C., Doni, S. 2000 Surface conductivity of molded sheets and films: I. Migration of filler particles. Book of Abstracts, *DMI Grantees Conference*, National Science Foundation, January 3-7, Vancouver, Canada.
96. Jana, S.C., Chandra, A. 2000 Rheological studies of reaction-induced phase separation in thermoplastic-thermoset polymeric systems. *PPS-16*, June 18-23, Shanghai, China.
97. Jana, S.C., Patel, N. 2000 Improvements in mechanical and thermal properties of polybutylene terephthalate (PBT) by reactive blending with epoxy. *PPS-16*, June 18-23, Shanghai, China.

98. Jana, S.C., Jain, S. 2000 Investigation of microstructures and properties of polyethersulphone (PES)-cured epoxy system. *PPS-16*, June 18-23, Sanghai, China.
99. Jana, S.C., Doni, S. 2000 Migration of filler particles in molded sheets and films. *PPS-16*, June 18-23, Sanghai, China.
100. Jana, S.C., Chandra, A. 1999 A study on rheology-morphology relationships in reactive processing of SAN and epoxy systems. *AIChE Annual Meeting*, October 31-November 5, Dallas, TX.

Courses taught at University of Akron

Graduate:

Introduction to Polymer Engineering
 Numerical Analysis of Polymer Processing Operations
 Polymer Blends and Alloys
 Polymer Nanocomposites
 Polymerization Reactor Engineering,
 Rheology of Polymeric Fluids

Undergraduate (BS Program on Mechanical Polymer Engineering):

Polymer Fluids
 Polymer Morphology
 Polymer Processing

Supervision of graduate students at the University of Akron

Graduates: 17 Ph.D. and 9 M.S. thesis completed.

Currently supervising : 10 Ph.D. and 4 M.S. students.

Ph.D. thesis completed:

1. Yannan Duan (Ph.D., March 2012) Thesis title: Fundamental studies on polymer and organic-inorganic hybrid nanoparticles reinforced silica aerogels.
2. Sayantan Roy (Ph.D., December 2011) Thesis title: Polyhedral oligomeric silsesquioxane-sorbitol non-covalent interactions: Effects on the reinforcement of isotactic polypropylene spun fibers.
3. Jason Randall (Ph.D., Fall 2005-August 2010) Thesis title: Reinforcement of silica aerogels
4. I. Sedat Gunes (Ph.D., Fall 2004 – April 2009) Thesis title: Analysis of shape memory properties of polyurethane nanocomposites.
5. Byoung J. Lee (Ph.D., Fall 2004 – June 2009) Thesis title: Nucleating agent-assisted preparation of polypropylene/polyhedral oligomeric silsesquioxane (POSS) nanocomposites and their characterization.
6. Ling Du (**Ph.D.**, Fall 2003 – January 2008) *Thesis title:* Highly conductive epoxy/graphite polymer composite bipolar plates in proton exchange membrane (PEM) fuel cells.

7. Feina Cao (**Ph.D.**, Fall 2003 – January 2008) *Thesis title*: Shape memory polyurethane nanocomposites.
8. Ayca Ertekin (**Ph.D.**) *Thesis title*: Analysis of wetting, flow, and end-use properties of resin transfer molded nanoreinforced epoxy-glass fiber hybrid composites. (Jointly with Dr. Lloyd Goettler).
9. Michael J. Gintert (**Ph.D.**, Fall 2003- August 2007) *Thesis title*: A novel approach to obtain high performance layered silicate thermoset polyamide matrix nanocomposites.
10. Guillermo Jimenez (**Ph.D.**, Fall 2002- December 2006) *Thesis title*: Characterization of PMMA and TPU carbon nanofiber composites produced by chaotic mixing.
11. Chang Do Jung (**Ph.D.**, Fall 2000 – May 2005) *Thesis title*: Synthesis of thermoplastic polyurethanes and polyurethane nanocomposites under chaotic mixing conditions.
12. Dhawal Dharaiya (**Ph.D.**, Fall 2001 – November 2005) *Thesis title*: Effects of nanoclay and carbon black on morphology development in mixing of immiscible polymers by chaotic mixing.
13. Jong Hyun Park (**Ph.D.**, Fall 2000 – March 2004) *Thesis title*: A study on nanocomposites of epoxy-clay and epoxy-clay-thermoplastic polymer systems.
14. Jairo Perilla (**Ph.D.**, Fall 2000 – July 2004) *Thesis topic*: A study on relationship between morphology and rheology of immiscible polymer blends with temporal changes in the interfacial area.
15. Chang Min Hong (**Ph.D.**, Fall 1999-November 2004). *Thesis title*: A study on shear-induced migration of conductive and non-conductive filler particles.
16. Asim Pattanayak (**Ph.D.**, Fall 2000 – December 2004) *Thesis title*: A study on clay-tethered thermoplastic polyurethane nanocomposites.
17. Madhusudan Sau (**Ph.D.**, Fall 1999 – April 2003) *Thesis title*: Morphology development in chaotic mixing of polymers.

MS thesis completed:

1. Angela Beltran Osuna (M.S., December 2011) Antifouling silica aerogels.
2. Kushal Bahl (M.S., 2010) *Thesis title*: Study of optimum process conditions for production of thermally conductive polymer compounds using boron nitride.
3. Numan Erden (**M.S.**, 2009) *Thesis title*: Polyurethane/polybenzoxazine-based shape memory polymers.
4. Robert Opalko (**M.S.**, 2008) *Thesis title*: Evaluation of the effects of NanofilR nanoclays in the blending of polypropylene and polystyrene.
5. Alberto Prieto (**M.S.**, 2001) *Thesis title*: Wood flour composites of high temperature polymers by reaction-induced phase separation.

6. Dhawal Dharaiya (**M.S.**, 2001) *Thesis title*: Thermoplastic polyhydroxyethers for compatibilization of blends containing polyesters and polyamides.
7. Nisha Patel (**M.S.**, 2000). *Thesis title*: Reactive compatibilization of PBT-PPO blends using low molecular weight epoxies.
8. Sachin Jain (**M.S.**, 2000). *Thesis title*: Nanocomposites of high performance thermoplastic polymers using epoxy as processing aid.
9. Shashishekar Doni (**M.S.**, 2000) *Thesis title*: Shear-induced migration of particles in filled polymers: Effects on conductivity and mechanical properties.

Ph.D. thesis in progress:

1. R. Benavides Gonsalez (**Ph.D.**, Spring 2008 – present) Carbon nanofibers by jet spinning.
2. X. Wang (**Ph.D.**, Fall 2008 – present) Functionalized polystyrene aerogels
3. D. Quade (**Ph.D.**, Fall 2008 – present) Mechanical characterization of aerogels
4. A. Shinko (**Ph.D.**, Spring 2009 – present) Shape memory polyimide aerogels
5. Kushal Bahl (Ph.D., Fall 2010 – present) Rolling resistance of natural fillers
6. S. Niknezhad (Ph.D., Spring 2011-present) Aerogels
7. M. Alrashed (Ph.D., Spring 2011-present) Nanocomposite coatings
8. M. Ghosh (Ph.D., Fall 2011) Polymer nanofibers
9. S. Rajgarhia (Ph.D., Fall 2011) Rolling resistance

M.S. thesis in progress:

R. Garcia (MS, Fall 2010 – present) Thermal conductivity of polymer compounds
 Shenlong Gu (MS, Fall 2011) – Shape memory polybenzoxazines
 Shujing Zhao (MS, Fall 2011) – Electrical conduction in liquid confined in coaxial nanofibers
 Jihui Shang (MS, Fall 2011) – Breakup of immiscible liquids in confined space in coaxial nanofibers

Ph.D. graduates in academia:

- Dr. Jairo E. Perilla, Associate Professor, Department of Chemical Engineering, National University of Colombia at Bogota, Bogota, Colombia
- Dr. Guillermo Jimenez, Professor, Laboratory of Polymers, School of Chemistry, National University of Costa Rica, Heredia, Costa Rica

Ph.D. graduates in industry:

Dr. Madhusudan Sau (Indian Oil Corporation, India), Dr. Jong Hyun Park (SABIC IP, South Korea), Dr. Chang Min Hong (Cheil Industries, South Korea), Dr. Asim Pattanayak (GE Global Research Center, India), Dr. Chang Do Jung (Samsung, South Korea), Dr. Dhawal Dharaiya (Hendrikson, Akron), Dr. Michael Gintert (Goodyear, Akron), Dr. Ling Du (Goodyear, Akron), Dr. Feina Cao (Lubrizol, Brecksville), Dr. Ayca Ertekin (Tyco Electronics, CA), Dr. Byoung J. Lee (Goodyear, Akron), Dr. Sedat Gunes (3M, Minneapolis), Dr. Jason Randall (Akzo Nobel), Dr. Sayantan Roy (Baker Hughes), Dr. Yannan Duan (PolyOne).