Dr. Sadhan C. Jana

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Presentations from Prof. Sadhan C. Jana's Group

Plenary and invited Talks at International Conferences:

1. Jana, S.C. High surface area polymeric template materials: Design and application. Distinguished Lecture at Advances in Chemical Engineering-2020, Dehradun, India, February 5 -7, 2020.

2. Jana, S.C. Design of polymer-derived nanoparticles, nanorods, and porous microparticles. Plenary talk at 2019 International Conference on Materials Research and Innovation (ICMARI), Bangkok, Thailand, December 16-18, 2019.

3. Jana, S.C. Continuous manufacturing of gel and aerogel microparticles and microrods. Keynote address at 2019 Regional Conference of the Polymer Processing Society, Pretoria, South Africa, November 18-21, 2019.

4. Jana, S.C. Trade-off between filler dispersion and hysteresis. Plenary talk at Fall Conference of the Rubber Society of Korea (RSK), at University of Suwon, Suwon, South Korea, November 7-8, 2019.

5. Jana, S.C. High surface area polymeric template materials: Design, performance, and applications. Plenary lecture at Advances in Polymer Science and Rubber Technology (APSRT 2019) Conference held at Indian Institute of Technology, Kharagpur, India during September 24-27, 2019

6.Jana, S.C., Teo, N. Surfactant-free microfluidic processes for continuous manufacturing of polyimide aerogel microparticles. Keynote address at 35th International Conference of the Polymer Processing Society, Cesme, Turkey, May 26-30, 2019.

7.Jana, S.C., Polymer-derived multifunctional materials for sustainability. Plenary talk at International Conference on Materials Research and Innovation, December 17-21, 2018, Bangkok, Thailand, organized by Kasetsart University, Bangkok, Thailand.

8.Jana, S.C. Engineering With Mesoporous Multifunctional Materials Derived From Organic and Inorganic Sources. Plenary talk at IMST 2018- An International Conference cum Expo-December 14-16, 2018 in Kolkata, India.

9.Jana, S.C., Polymer-derived multifunctional materials for sustainability. Plenary talk at PPS 2018, the 2018 Regional Conference of the The Polymer Processing Soceity, November 5-9, 2018, Boston, MA.

10. Jana, S.C. Multifunctional materials for sustainability, Plenary talk at 9th Easter Mediterranean Chemical Engineering Conference (EMCC9), Ankara, Turkey, August 31-September 2, 2018.

11. Jana, S.C. Changing landscape in polymer research: Role of chemical engineers. Prof. N.R.Kamath & Mrs Ruzena Kamath Memorial Lecture, Indian Institute of Chemical Engineers Annual Conference (CHEMCON 2017), Haldia, India. December 27-30, 2017.

12. Jana, S.C., Engineering of template microstructures derived from nanofibers and mesoporous polymers. Plenary Lecture, 14th Brazilian Polymer Congress, Aguas de Lindoia in Sao Paulo, Brazil October 22-26, 2017.

13. Jana, S.C. Changing landscape in polymer research: Challenges and opportunities. Inaugural S.R. Palit Memorial Lecture at MACRO 2017 conference, Society of Polymer Science India, Trivandrum, India, January 8-12, 2017.

14. Jana, S.C. Multifunctional materials: State-of-the art and novelties. Plenary talk at International Conference on Functional Materials, IIT Kharagpur, India, December 12-14, 2016.

15. Jana, S.C. Changing landscape in polymer research: Challenges and opportunities. Plenary talk at 2016 Asian Workshop in Polymer Processing, Melbourne, Australia, November 6-9, 2016.

16. Jana, S.C., Gu, S., Zhai, C., Liu, H., Liu, T. Design of mesoporous solid networks in polymer-derived aerogel monoliths and microparticles. Paper No. PMSE 291. Invited talk presented at the 252nd American Chemical Society National Meeting and Exposition, Philadelphia, August 21-25, 2016.

17. Jana, S.C., Kim, S.J., Shinko, A., Gu, S., Zhai, C. *Lightweight aerogel materials: From fundamentals to innovative applications*. Invited keynote talk presented at the 14th International Symposium on Bioplastics, Biocomposites and Biorefining (ISBBB 2016), Guelph, Ontario, Canada, May 31-June 3, 2016.

18. Jana, S.C., Gu, S. *Open cell aerogel foams*. Keynote address in session Polymer Foams and Lightweight Structures at 32nd International Conference of the Polymer Processing Society (PPS-32), Lyon, France, July 25-29, 2016.

19. Jana, S.C., Raut, P., Swanson, N., Albehaijan, H., Pugh, C., *Improved dispersion of carbon black in rubber compounds for manufacturing low rolling resistance tires*. Keynote address in session Elastomers and Thermoplastic Elastomers at 32nd International Conference of the Polymer Processing Society (PPS-32), Lyon, France, July 25-29, 2016.

20. Jana, S.C., Rajgarhia, S., Kim, S.J., Chase, G. *Design of nanoscale polymeric building blocks for high efficiency separation problems*. Invited talk presented at Fellows Forum, Society of Plastics Engineers Annual Technical Conference, Indianapolis, IN, May 22-25, 2016.

21. Jana, S.C., Gu, S., Zhai, C., Li, H., Liu, T. *Design of mesoporous solid networks in polymer-derived aerogels monoliths and microparticles*. Plenary talk at 11th International IUPAC Conference on Polymer-Solvent Complexes & Intercalates (Polysolvat-11), Kolkata, India, January 27-30, 2016.

22. Jana, S.C. *Challenges and opportunities in functional nanomaterials design*. Invited talk presented at Fellows Forum, Society of Plastics Engineers Annual Technical Conference, Orlando, FL, March 22-25, 2015.

23. Bahl, K., Jana, S.C. *Surface engineering of sustainable filler materials for low rolling resistance rubber compounds*. Keynote address at Second Symposium on Advances in Sustainable Polymers (ASP-15), Indian Institute of Technology, Guwahati, India, January 21-22, 2015.

24. Raut, P., Shinko, A., Niknezhad, S., Jana, S.C. *Functional materials for new technologies: Designs at nanoscale*. Invited Special Lecture at International Conference on Polymer Science and Technology, Macro 2015, Calcutta, India, January 23-26, 2015.

25. Gu, S., Shinko, A., Jana, S.C. *Science and technology of gels and associated nanostructures of aerogels*. Plenary talk at First International Conference on Polymer Science and Engineering (PSE-2014), Beijing, China, November 10-13, 2014.

26. Gu, S., Shinko, A., Jana, S.C. *Science and technology of gels and associated nanostructures via thermo-reversible gelation process*. Plenary talk at POLYSOLVAT-

10, 10th International IUPAC Conference on Polymer-Solvent Complexes & Intercalates. 22-25 September, 2014, Salerno, Italy.

27. Duan, Y., Wang, X., Benavides, R., Jana S.C. *Functional materials design at nanoscales*. Invited talk at the North American Thermal Analysis Society in the special symposium in honor of Stephen Cheng, Santa Fe, NM, September 14-17, 2014.

28. Zhang, H, Jana, S.C. *Design of mesoporous organic-inorganic hybrid aerogels*. Invited talk at "Porous Polymers" at the 248th ACS National Meeting in San Francisco, California, August 10-14, 2014.

29. Bahl, K., Jana, S.C. Surface engineering of sustainable filler materials in preparation of polymer compounds. Keynote talk at 14th International Conference on Bioplastics, Biocomposites, and Biorefining, May 19-24, 2014, Guelph, Ontario, Canada.

30. Rajgarhia, S., Jana, S.C., *Fiber diameter selection in production of nanofibers by gas jet method*. Invited talk for presentation in the session "Electrospinning and Nanofibers: Symposium in Honor of the 85th Birthday of Darrell Reneker", Division of Polymeric Materials Science and Engineering (PMSE) in the 247th American Chemical Society (ACS) National Meeting & Exposition in Dallas from March 16-20, 2014.

31. Jana, S.C., Bahl, K., *Surface engineering of sustainable filler materials in preparation of polymeric compounds*. Invited talk at the memorial session for Donald Witenhafer at 2014 Annual Technical Conference of the Society of Plastics Engineers, Las Vegas, April 28-30, 2014.

32. Duan, Y., Wang, X., Benavides, R., Jana, S.C. *Functional materials design at nanoscale*. POLYCHAR 22 World Forum on Advanced Materials, 7-11 April 2014, Stellenbosch, South Africa.

33. Jana, S.C., Rajgarhia, S., Benavides, R., Reneker, D. Fiber diameter selection in production of nanofibers by gas jet method. Invited talk at "Electrospinning and Nanofibers: Symposium in Honor of the 85th Birthday of Darrell Reneker" at 247th ACS National Meeting & Exposition, Dallas, TX, United States, March 16-20, 2014 (2014), PMSE-26.

34. Jana, S.C., Benavides, R., Reneker, D., *High throughput nanofibers by gas jet method: Unique morpholoigies and applications*, Invited Lecture at 12th International Polymers for Advanced Technologies Conference held in Berlin, Germany from September 29-October 2, 2013.

35. Benavides, R., Jana, S.C., Reneker, D. *Scalable production of polymer nanofibers using gas jet*. Keynote address at 29th Annual Conference of Polymer Processing Society, Nuremberg, Germany, July 15-19, 2013.

36. Benavides, R., Jana, S.C., Reneker, D. *High throughput nanofibers by gas jet method: Unique morpholoigies and applications*. Invited talk in session Polymer Nanocomposites. 5th International Conference on Rubber and Rubber-like Materials (ICRRM 2013), Kharagpur, India, March 6-9, 2013.

37. Roy, S., Duan, Y., Jana, S.C. Engineering at nanoscale. Keynote address in session M36, Polymer Analysis Division, Society of Plastics Engineers Annual Technical Conference, Cincinnati, OH, April 21-24, 2013.

38. Jana, S.C., Duan, Y., Wang, X., Shinko, A. Chemical and engineering issues of functional polymer aerogels (Paper no. 237). Invited talk at session on Polymer Polymers: Gels, Hydrogels, and Aerogels, Polymer Materials Science and Engineering Division, American Chemical Society Spring Meeting, New Orleans, April 7-11, 2013.

39. Jana, S.C., Benavides, R., Reneker, D. Carbon nanomaterials: Basics of mesopitch-derived nanofibers and graphene aerogels (Paper no. 580). Invited talk at session on Polymer Precursor-derived Carbon Nanostructured Carbon Materials, Polymer Division, American Chemical Society Spring Meeting, New Orleans, April 7-11, 2013.

40. Jana, S.C. *Design of nanoreinforcements by engineering at nanoscale*. Keynote (#KN-07-02) address at 28th Polymer Processing Society Conference held during December 11-15, 2012 at Pattaya, Thailand.

41. 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.

42. 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.

43. 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 held in Montecatini Terme, Italy, on June 10-14, 2012.

44. Jana, S.C., Gunes, S., Cao, F., Bahl, K., Nanocomposites of rubbery polymers: An engineer's views. International Rubber Conference 2012(IRC 2012) held on May 21-24, 2012 in Jeju, Korea.

45. 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.

46. 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.

47. 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.

48. 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.

49. 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.

50. 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.

51. Jana, S.C., *Recent developments in shape memory polymers and their nanocomposites*. RGJ-Ph.D. Congress XI, Pataya, Thailand, April 1-3, 2010.

52. 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.

53. Jana, S.C., *Nanocomposites of rubbery polymers: An engineer's view*. Invited lecture, IRE09, International Conference, Calcutta, January 28-31, 2009.

54. 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.

55. Jana, S.C., Rheology as a tool for elucidation of properties of nanocomposites. Keynote address, ANTEC 2009, Chicago, June 22-24, 2009.

56. Jana, S.C., Gunes, I.S., Cao, F., *Shape memory polymer nanocomposites*. Invited lecture, UKC2008, US-Korea Conferecne on Science, Technology, and Entrepreneurship, San Diego, August 14-17, 2008.

57. Jana, S.C., *Rheology as a tool for elucidation of properties of polymer nanocomposites*. Invited lecure, RheoProcessing 2008, Guimaraes, Portugal, June 12-14, 2008.

58. 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.

59. Jana, S.C., Shape memory polymer nanocomposites. Invited talk at NSTI Nanotech 2008, June 1-5, 2008, Boston.

60. 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.

61. 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.

62. 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.

63. 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.

64. 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.

65. 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.

66. 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.

67. 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.

68. 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.

69. 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).

70. Jana, S.C., *Chemical and engineering issues of polymer nanocomposites synthesis and processing*, 23rd Colombian Chemical Engineering Congress, Manizales, Colombia, August 24-26, 2005.

71. Jana, S.C., *Doing things right with chaotic mixing*, Keynote lecture, Polymer Processing Society (PPS) Regional Meeting, Quebec, August 15-17, 2005.

72. 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.

73. 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.

74. Jana, S.C. *Chaotic mixing: A new technology for polymer blending*. Presented at MACRO-2002 of Indian Society of Polymer Science, Kharagpur (India), December 9-11, 2002.

75. Jana, S.C., *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, 2001.

76. Jana, S.C., Prieto, A. *Natural fiber reinforcement of polymeric composites by reaction-induced phase seaparation*. Presented at 222nd ACS National Meeting, Chicago, August 26-30, 2001.

77. Jana, S.C., Patel, N. *Reactive Compatibilization of PBT-PPO Systems Using Low Molecular Weight Epoxies.* Presented at PACIFICHEM 2000 at Honolulu, Hawai, 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 Chemistry, North Carolina A&T University, Greensboro,NC

Department of Mechanical and Industrial Engineering, University of Toronto, Canada

Department of Physics, Cleveland State University, Cleveland, OH

Department of Chemical Engineering, Texas Tech University, Lubbock, TX

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 Chemical Engineering, University of South Carolina

Department of Macromolecular Science and Engineering, Case Western Reserve University

Department of Mechanical Engineering, University of Toronto

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

PolyOne Corporation, Avon Lake, OH

Reliance Industries Limited, Mumbai, India

Levich Institute of Physico-chemical Hydrodynamics, CUNY

NASA Glenn Research Center, Cleveland