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Ph. D. (Mechanical Engineering) from Indian Institute of Technology, Roorkee in 2002

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Research Areas and Interests

- Adhesion and Adhesives
- Plasma Processing of Materials
- Polymer Composite and Nano Composite
- Different Surface Modification Methods of Materials
- Modification of Composite under High Energy Radiation
- Durability of Adhesive Bonding under Aviation and Space Environments
- Materials for Space Radiation Shielding (long term mission at LEO and GEO)
- Durability of Polymeric Nano Composite under Aviation and Space Environments

Research Target Achieved

- High Performance Nano Adhesive (Service Temperature Achieved upto + 375 °C); highly stable for Aviation and Space Applications
- High Performance Polymeric Nano Composite (Service Temperature Achieved upto + 500 °C); highly stable for Aviation and Space Applications

Member of Editorial Boards: Journal of Aircraft and Spacecraft Science, International Journal of Surface Engineering and Materials Technology and Journal of New Dimensions of Science and Technology

Reviewer of International Journals: Journal of Applied Polymer Science, Journal of Clay Composite, Journal of Adhesion, International Journal of Adhesion and Adhesives.

Professional Recognition, Awards and Honors

- Qualified for The Research Award of **National Academies (National Research Council of USA)** in February 2005, to work at **NASA-Marshall Space Flight Center** for **NASA's Vision for Space Exploration**.
- Visiting Professor at Department of Aerospace Engineering, Korea Advanced Institute of Science and Technology, South Korea, June 2010.
- Awarded the Research Award of **Natural Science and Engineering Research Council (NSERC)** of Government of Canada in May 2003. This program provides **promising emerging scientists and**

engineers to work with the research groups or leaders in Canadian government laboratories and research institutions in Canada.

- Qualified for the prestigious Marie Curie in coming Post Doctoral Fellowship from European Union 7th Framework Program in 2008.
- Member: American Institute of Aeronautics and Astronautics (AIAA).
- Member: European Society of Composite Materials (ESCM)
- Advisor: Indo-Swiss Bonding International Congress.
- International Advisor: MICROWAVE 2008.
- External Reviewer of Faculty Member of Royal Military College of Canada for Research Award of Department of National Defence, Government of Canada.
- Visiting Professor, October 2010, Department of Chemistry and Chemical Engineering, Royal Military College of Canada.
- Visiting Scientist, September 2008, Department of Chemistry and Chemical Engineering, Royal Military College of Canada under National Defence of Canada.
- Visiting Scientist, September 2007, Department of Chemistry and Chemical Engineering, Royal Military College of Canada under National Defence of Canada.
- Visiting Scientist, June 2007, Department of Aerospace Engineering, Korea Advanced Institute of Science and Technology, South Korea.
- Visiting Scientist, September 2006, Department of Chemistry and Chemical Engineering, Royal Military College of Canada under National Defence of Canada
- Visiting Scientist June-September, 2000 under DST-DAAD PPP 2000 at Department of Mechanical Engineering, Technical University of Berlin, Berlin, Germany.
- Awarded Institute Associateship of Indian Institute of Technology, Kharagpur, India, August 08, 2002.
- Awarded Senior Research Fellowship of Council of Scientific and Industrial Research (CSIR), Govt. of India, April 01, 1998.
- Awarded Senior Research Fellowship on a project sponsored by University Grants Commission (UGC), Govt. of India, March 22, 1996.
- Qualified in Graduate Aptitude Test in Engineering (GATE) for post graduate fellowship conducted by Ministry of Human Resources Development (MHRD), Govt. of India, New Delhi, India, in 1993 with 88.08 percentile.

International Collaborations

- Department of Chemistry and Chemical Engineering, Royal Military College of Canada (National Defence of Canada), Canada
- Department of Aerospace Engineering, Korea Advanced Institute of Science and Technology (KAIST), South Korea
- Department of Mechanical Engineering, Tokyo Institute of Technology, Japan
- Faculty of Aerospace Engineering, Delft University of Technology, The Netherlands
- Fraunhofer Institute for Manufacturing Technology and Advanced Materials – IFAM, Germany

Sponsored Projects

- Studies on Durability of Adhesive Bonding of High Performance Polymer to Titanium for Space Applications (Collaborator), **Sponsor: National Defence of Canada** (Government of Canada).
- High Performance Nano Adhesive Bonding of Titanium for Aerospace Applications (Collaborator), **Sponsor: Natural Science and Engineering Research Council** (Government of Canada).

- Durability of Nano Adhesive Bonding of High Performance Polymer under Aerospace and Space Environments (Collaborator), **Sponsor: National Defence of Canada** (Government of Canada).
- Investigation on Ultra Light Weight High Performance Polymeric Nano Composite for Aviation and Space Applications (Collaborator), **Sponsor: National Defence of Canada** (Government of Canada).
- Polymer Scaffold for Tissue Engineering (Co-investigator), Department of Bio Technology, Govt. of India.
- Polymeric Composite Damage Repair (Principal Investigator), Science and Engineering Research Council, Govt. of Singapore.
- Investigation on Carbon Nano Fiber Reinforced Polyether Ether Ketone/Polyether Imides as Polymer Composite Container for Long Time Nuclear Waste Disposal (Principal Investigator), Bhabha Atomic Research Center, Govt. of India.
- Investigation on Effect of Space Radiations on Space Durable Polymeric Nano Composite for Future Generation Space Missions, (Co-Investigator), Bhabha Atomic Research Center, Govt. of India.

Ph. D. Projects

- Development of High Performance Polymeric Nano Bonding for Automotive and Aerospace Applications (Awarded)
- Development of Space Durable Polymeric Nano Composites for Applications to Geosynchronous Earth Orbit (GEO) (Submitted)
- High Performance Nano Adhesive Bonding of High Performance Polymer to Titanium and its Durability under Aerospace Environments (On-going)
- Nano Adhesive Bonding of Space Durable Polymer and its Stability under Space Environments (On-going)

Patents and Non Disclosure Agreements

- Method for Treatment of a Surface Area of Steel: Filed (Ref: 07123351 .4-1215; Europe)
- Epoxy-Resin Adhesive and Method for Bonding such an Epoxy Resin Adhesive: Filed (Ref: 07107685 .5-1214; Europe)
- One Non Disclosure Agreement (NDA) on Ceramic Adhesive Bonding with Ventracor, Australia.
- Two Non Disclosure Agreements (NDA) on Nano Adhesive Bonding with Diffurtham, The Netherlands.

Citation of Research Articles by Industries

- Lockheed Martin, USA
- Israel Aerospace Limited, Israel
- Leoni Studer AG, Switzerland
- Dutch Space, The Netherlands
- Ventracor Limited, Australia

Book Chapters

- “Radiation and Vacuum” Handbook of Adhesion Technology, DOI 10.1007/978-3-642-01169-6_32, # Springer-Verlag Berlin Heidelberg (2011).

- “Adhesion Characteristics of High Temperature Resistant Polymer” on Journal of Adhesion Science and Technology, 26, 955-967 (2012).

Selected Publications in International Journal and Conferences

- **S. Bhowmik**, T. K. Chaki, S. Ray, F. Hoffmaan and L. Dorn, Effect of Surface Modification of HDPE and PP by DC and RF Glow Discharge on Wetting and Adhesion Characteristics, *Journal of Metallurgical and Materials Transactions* Vol. **35 A** (2004) pp. 865 – 877.
- **S. Bhowmik**, T. K. Chaki and S. Ray, Surface Modification of PP Under Different Electrodes of DC Glow Discharge and Its Physicochemical Characterization, *Journal of Surface and Coatings Technology* Vol. **185** Issue: 1 (2004) pp. 81-91.
- **S. Bhowmik**, T. K. Chaki, S. Ray, F. Hoffmaan and L. Dorn, Experimental Investigation into the Effect of DC Glow Discharge pretreatment of HDPE on tensile lap shear strength, *International Journal of Adhesion and Adhesives* Vol. **24** Issue: 6 (2004) pp. 461-470.
- **S. Bhowmik**, P. K. Ghosh and S. Ray, Surface Modification of HDPE and PP by Mechanical Polishing and DC Glow Discharge and their Adhesive Joining to Steel, *Journal of Applied Polymer Science*, Vol. **80** (2001) pp. 1140 – 1149.
- **S. Bhowmik**, P. K. Ghosh, S. Ray and S. K. Barthwal, Surface Modification of High Density Polyethylene and Polypropylene by DC Glow Discharge and Adhesive Bonding to Steel, *Journal of Adhesion Science and Technology*, Vol. **12** No. 11 (1998), pp. 1181-1204.
- **S. Bhowmik**, H. W. Bonin, V. T. Bui and T. K. Chaki, Physicochemical and Adhesion Characteristics of High Density Poly Ethylene when Treated in a Low Pressure Plasma under Different Electrodes, *Journal of Adhesion* 82, pp. 1-18 (2006).
- **S. Bhowmik** and T. K. Chaki, Failure Analysis of Adhesive Joint of DC Glow Discharge Exposed PP to Steel, Polymer Surface Modification Relevance to Adhesion, Toronto, Canada (2003).
- **S. Bhowmik** and T. K. Chaki, Wetting and Adhesion Characteristics of DC and RF Glow Discharge Exposed PP, Polymer Surface Modification Relevance to Adhesion, Toronto, Canada (2003).
- **S. Bhowmik**, H. W. Bonin and V. T. Bui, Modification of High Performance Polymer Composite through High Energy Radiation and Low Pressure Plasma for Aerospace and Space Applications, *Journal of Applied Polymer Science*, Vol. **102** (2006) pp. 1959-1967.
- **S. Bhowmik**, H. W. Bonin, V. T. Bui and R. D. Weir, Durability of Adhesive Bonding of Titanium at Radiation and Aerospace Environments, *International Journal of Adhesion and Adhesives* 26 pp. 400-405 (2006).
- **S. Bhowmik**, H. W. Bonin, V. T. Bui, J. A. Poulis and R. Benedictus, High Performance Nano Adhesive Bonding of Titanium for Aerospace and Space Applications, *International Journal of Adhesion and Adhesives*, Vol. 29, Number 3 (2009) pp. 259-267.
- **S. Bhowmik**, H. W. Bonin, V. T. Bui and R. Benedictus, Nano Adhesive Bonding of High Performance Polymer for Aerospace Applications: 8th International Conference on Flow Processes in Composite Materials 11-13 July 2006, Ecole des Mines de Dourai, Durai, France.
- **S. Bhowmik (Invited Author)**, H. W. Bonin, V. T. Bui and R. D. Weir, High Performance Nano Adhesive Bonding of High Temperature Resistant Polymer to Titanium for Aviation and Space Applications: **SWISSBONDING 06**: 20th International Congress of Adhesion and Bonding Technology, Lake of Zurich 16-19 May 2006.
- **S. Bhowmik (Invited Author)**, H. W. Bonin, V. T. Bui and R. D. Weir, Adhesion and Durability of High Performance Polymer under Space and Radiation Environments: **SWISSBONDING 05**: 19th International Congress of Adhesion and Bonding Technology held at Lake of Zurich, Switzerland from 23-25 May 2005.

- **S. Bhowmik (Invited Author)**, H. W. Bonin, V. T. Bui and R. D. Weir, Thermal Fatigue Behavior of Adhesive Bonding of Titanium for Aerospace Application: **SWISSBONDING 05**: 19th International Congress of Adhesion and Bonding Technology held at Lake of Zurich, Switzerland from 23-25 May 2005.
- **S. Bhowmik**, H. W. Bonin and V. T. Bui, Effect of Space and Radiation Environments on Durability of High Performance Polymer to Titanium Adhesive Joints: The Fifth Canadian International Composites Conference, **CANCOM 2005**, Vancouver, Canada from 16-29 August 2005.
- **S. Bhowmik**, H. W. Bonin, V. T. Bui and T. K. Chaki, Influence of Different Electrodes of Low Pressure Plasma on Physicochemical and Adhesion Characteristics of High Density Poly Ethylene, Published in 7th International Conference in Structural Adhesives in Engineering, July 13-15, Bristol, UK (2004) pp. 128-132.
- **S. Bhowmik**, H. W. Bonin, V. T. Bui and R. D. Weir, Effects of High Energy Radiation on Adhesive Bonding of Titanium for Nuclear and Space Application, Published in 7th International Conference in Structural Adhesives in Engineering, to be held on July 13-15, Bristol, UK (2004) pp. 17-21.
- **S. Bhowmik**, T. K. Chaki and S. Ray, Surface Modification of HDPE and PP by Low Pressure Plasma and Adhesive Joining to Steel, Published in India Rubber Expo (2003), Mumbai, India.
- **S. Bhowmik**, P. K. Ghosh, S. Ray, F. Hoffmann and L. Dorn, Surface Modification of HDPE and PP under DC and RF Glow Discharge for Adhesive Joining to Steel, Published in National Seminar on Advances in Materials and Processing, Nov. 9 – 10, (2001), Organized by The Institution of Engineers (India) and The Department of Metallurgical and Materials Engineering, Indian Institute of Technology, Roorkee, India.
- **S. Bhowmik**, P. K. Ghosh and S. Ray, Effect of Surface Modification and Surface Chemistry of Glow Discharge treated HDPE and PP on the Strength of their Adhesive Joint to Steel, Published in International Seminar on Polymer Materials in 21st Century, February 21 – 24, (2000), New Delhi, India.
- **S. Bhowmik**, P. K. Ghosh and S. Ray, Effect of Mechanical Polishing on the Surface Modification of HDPE and PP by DC Glow Discharge and their Adhesive Joining to Steel, Published in Second International Symposium on Polymer Surface Modification: Relevance to Adhesion: May 24 – 26, (1999), Newark, NJ, USA.
- **S. Bhowmik**, R. Benedictus and J. A. Poulis, Fabrication of Space Durable Polymer and its Performance under Space Environments, Published in 45th **American Institute of Aeronautics and Astronautics (AIAA)** Aerospace Sciences Meeting and Exhibition, 8-11 Jan 2007 Reno Hilton, Reno, Nevada, USA.
- **S. Bhowmik**, R. Benedictus and J. A. Poulis, Fabrication of Nano Adhesive Bonding of Titanium for Aerospace Applications, published in **The 11th World Conference on Titanium**, International Conference Hall in Kyoto, Japan, June 3-7, 2007.
- **S. Bhowmik (Invited Author)**, R. Benedictus, J. A. Poulis, H. W. Bonin, V. T. Bui and R. D. Weir, Space Durable Polymeric Composite Modified by Low Pressure Plasma and High Energy Radiation and its Performance under Space Environments, 7th International Symposium on Ionizing Radiation and Polymers, Antalya, Turkey 23-28 September 2006.
- **S. Bhowmik**, R. Benedictus and C. J. Kim, Space Radiation at Geosynchronous Earth Orbit and Scope of Space Durable Polymeric Nano Composite, Published in International Conference on Rubber and Rubber like Materials, at Rubber Technology Centre, IIT Kharagpur, January 8-10, 2008.
- **S. Bhowmik**, R. Benedictus, J. A. Poulis, H. W. Bonin and V. T. Bui, High Performance Nano Adhesive Bonding of Space Durable Polymer and its Performance under Space Environments, **Journal of Spacecraft and Rockets (AIAA)**, Vol. 46, No. 1, pp. 218-224 (Jan-Feb 2009).
- **S. Bhowmik**, R. Benedictus, V. T. Bui, H. W. Bonin and R. D. Weir, Modification of Single Walled Carbon Fibre Nano Tube Dispersed High Performance Adhesive Bonding of Titanium, Published in

SWISSBONDING 07: 21st International Congress of Adhesion and Bonding Technology, Lake of Zurich, Switzerland from 14-16 May 2007.

- **S. Bhowmik**, R. Benedictus, J. A. Poulis, H. W. Bonin and V. T. Bui Influence of Mixed Field Radiation and Gamma Radiation on Nano Adhesive Bonding of High Performance Polymer, *Journal of Polymer Engineering* Vol. 28, No. 4, pp. 225-242 (2008).
- **S. Bhowmik**, R. Benedictus and C. J. Kim, Development of High Performance Polymeric Nano Composite for Space Radiation Shielding, Published in Interdisciplinary Transport Phenomena V: Fluid, Thermal, Biological, Materials and Space Sciences, October 14-19, 2007, Bansko, Bulgaria.
- **S. Bhowmik**, R. Benedictus and J. A. Poulis, Influence of Space Radiation on Nano Adhesive Bonding of High Performance Polymer, accepted in International Conference on Polymers in Defence and Aerospace 2007 Toulouse, France, 18-19 September 2007.
- **S. Bhowmik**, R. Benedictus and J. A. Poulis, Fabrication of Aluminium by High Performance Nano Adhesive for Aerospace and Space Applications, accepted in 5th International Conference on Thin Walled Structures, 18-20 June, 2008 Brisbane, Australia.
- **S. Bhowmik (Invited Author)** and R. Benedictus, Performance of Space Durable Polymeric Nano Composite under Space Radiation at Low Earth Orbit; Published in IEEE Applied Electromagnetics Conference AEMC 2007, 19-20 December, Kolkata, India.
- **S. Bhowmik (Invited Author)** and R. Benedictus, Comparative Studies and Failure Mechanism of Ceramic Adhesive and Organic Adhesive for Fabrication of Polymer to Metal, Published in 1st Indo-SWISSBONDING International Conference, Madras Institute of Technology, Anna University, 14-16th February, 2008.
- **S. Bhowmik** and R. Benedictus, Application of Polymeric Nano Composite at Low Earth Orbit, Accepted in 13th European Conference on Composite Materials, June 2-5, 2008 Stockholm, Sweden.
- **S. Bhowmik (Invited Author)** and R. Benedictus, Space Radiation at Geosynchronous Earth Orbit and Performance of Different Space Durable Polymeric Nano Composites, Published in Asian Polymer Association Conference of Indian Institute of Technology, Delhi, January 28-31, 2008.
- V. K. Patel, T. K. Chaki, **S. Bhowmik**, R. Benedictus and J. A. Poulis, Developments in Plasma Assisted Surface Treatments of Aluminium and its Alloys for Adhesive Bonding, , Published in 1st Indo-SWISSBONDING International Conference, Madras Institute of Technology, Anna University, 14-16th February, 2008.
- S. O. Park, J. B. Moon, Y. G. Lee, C. G. Kim and **S. Bhowmik**, Usage of Fiber Bragg Grating Sensors in Low Earth Orbit Environment, Published in SPIE Conference, San Diego, 16-21 February 2008.
- M. Faraz, H. M. S. Iqbal, **S. Bhowmik** and R. Benedictus, Microgravity Fire at Low and Geosynchronous Earth Orbit and Scope of Space Durable Polymeric Nano Composites, Composites and Polycon (2009).
- H. M. S. Iqbal, M.I. Faraz, N. K. Bhattacharya, U. Deka, S. Jha and **S. Bhowmik (Invited Author)**, Comparative Studies of Adhesion Properties of High Performance Polymer Modified by Atmospheric Pressure Plasma and Low Pressure Plasma, **SWISSBONDING 09**: 25th International Congress of Adhesion and Bonding Technology, Lake of Zurich 11-13 May 2009.
- H.M.S. Iqbal, **S. Bhowmik**, and R. Benedictus, Surface Modification of High Performance Polymers by Atmospheric Pressure Plasma and Failure Mechanism of Adhesive Bonded Joints, *International Journal of Adhesion and Adhesives*, Vol. 30, 418-424 (2010).
- H.M.S. Iqbal, **S. Bhowmik**, J. A. Poulis and R. Benedictus, Effect of Plasma Treatment and Electron Beam Radiations on the Strength of Nanofilled Adhesive Bonded Joints, *Journal of Polymer Engineering and Science*, 1505-1511. 2010.
- H.M.S. Iqbal, **S. Bhowmik** and R. Benedictus, Thermo-mechanical Characteristics of Space Durable Adhesive Joint of High Performance Polymer, Accepted for 50th AIAA/ASME/ASCE/ASC Structural Dynamics, and Materials Conference, 4th – 7th May, 2009, Palm spring, California, USA.

- H.M.S. Iqbal, **S.Bhowmik** and R. Benedictus, Development of Nanofibers Reinforced polymer composite for space application, 17th International Conference on Composite Materials, 27th – 31st July 2009, Edinburgh, UK .
- M. Akram.Ch, **S. Bhowmik**, R.Benedictus, J.A.Poulis, Surface Modification of Titanium by Atmospheric Pressure Plasma for Adhesive Bonding and its Application to Aviation and Space, Euromat: 2009 European Congress and Exhibition on Advanced Materials and Processes, 07 Sep 2009 - 10 Sep 2009, Glasgow, UK.
- M. Akram., **S.Bhowmik**, R.Benedictus, J.A.Poulis, Surface Modification of Polyimide by Atmospheric Pressure Plasma for Adhesive Bonding with Titanium and its Application to Aviation and Space, Sixth International Symposium on Polyimides and other High Temperature/High Performance Polymers Synthesis, Characterization And Applications. November 9-11, 2009, at the Florida Institute of Technology, Melbourne, FL, USA
- S. Jha, **S. Bhowmik**, N. Bhatnagar, N. Bhattacharya and U. Deka, Experimental investigation into the effect of Adhesion Properties of High Performance Polymer Modified by Atmospheric Pressure Plasma and Low Pressure Plasma: A comparative Study, *Journal of Applied Polymer Science* Vol. 118, 173-179 (2010).
- M. I. Faraz, H. M. S. Iqbal, **S. Bhowmik** and R. Benedictus, Microgravity Fire at Low and Geosynchronous Earth Orbit and Scope of Space Durable Polymeric Nano Composites, Proceedings 7th International conference on composite science and technology, Jan 20-22 2009, Sharjah, UAE.
- M. I. Faraz, **S. Bhowmik** and R. Benedictus: Synthesis of High Temperature Bismaleimide /Carbonnanofibers Nanocomposites by Thermokinetic Mixing ,American society for composites-24th technical conference , 16-17 September, 2009, University of Delaware ,USA.
- M. I. Faraz, **S. Bhowmik**, C. de Ruijter, F. Laoutid, R. Benedictus, Ph. Duboi, J.V.S.Page, S.Jeson Thermal, morphological and mechanical characterization of Novel Carbon Nanofiber Filled Bismaleimide Composite, *Journal of Applied Polymer Science*. Vol. 117, 2159-2167 (2010).
- **S. Bhowmik**, R. Benedictus, J. A. Poulis, H. W. Bonin and V. T. Bui, High Performance Nano Adhesive Bonding of Titanium for Aerospace and Space Applications, *International Journal of Adhesion and Adhesives*, Vol. 29, 259-267, (2009).
- H. M. S. Iqbal, **S. Bhowmik**, R. Benedictus, J. B. Moon, C. G. Kim and A. H. I. Mourad, Processing and Characterization of Space Durable High Performance Polymeric Nanocomposite, *Journal of Thermophysics and Heat Transfer of American Institute of Aeronautics and Astronautics (AIAA)*, Vol. 25. Number 1, 87-95 (2011).
- N. Bhatnagar, **S. Bhowmik**, S. Jha, D. Pyngrope, R. Pradhan, V. T. Bui and H. W. Bonin, Electron Beam Modification of Space Durable Polymeric Nano Adhesive Bonding of Ultra High Temperature Resistant Polymer, *Journal of Polymer Engineering* Vol. 31, Issue 4, 381-386 (2011).
- M. Akram, K. M. B. Jansen, L. J. Ernst and **S. Bhowmik**, Atmospheric Pressure Plasma Surface Modification of Titanium for High Temperature Adhesive Bonding, *International Journal of Adhesion and Adhesives*, Vol 31, Issue 7, 598-604, (2011).
- N. Bhatnagar, S. Jha and **S. Bhowmik**, Surface characterization techniques for measuring the chemical state & elemental composition of polymeric surfaces, *International Journal of Emerging Technologies and Applications in Engineering Technology and Sciences*, Vol. 3, 490-493 (2010).
- N. Bhatnagar, S. Jha and **S. Bhowmik**, Energy dispersive spectroscopy study of surface modified PEEK, *Journal of Advanced Materials Letters* (2011).
- N. Bhatnagar, S. Jha and **S. Bhowmik**, Application of High Performance Polymer- Polyetheretherketones (PEEK) in Aerospace Industry, *Inventi Journals*, Vol. 1, Issue 1 (2010).
- N. Bhatnagar, S. Jha and **S. Bhowmik**, Surface Characterization of Polymeric Composites Modified by Plasma Technique – A Review”, *International Journal of Emerging Technologies and Applications in Engineering Technology and Sciences*, Vol. 3, 490-493 (2010).

- **S. Bhowmik**, Studies on the Effects of Welding Speed and Welding Heat on Depth of HAZ and Penetration in Single Run Submerged ARC Automatic Square Butt Welding, Vol. 75 *Journal of A. E.* (9), 2005.
- **S. Bhowmik**, M. Akram, H. M. S. Iqbal, R. Benedictus and J. A. Poulis, State of the Art Space Durable Polymeric Nano Composite and its Fabrication by Nano Adhesive Bonding, 2nd Indo Swiss Bonding International Symposium, 11-13 Feb 2010, Sikkim, India.
- J. B. Moon, I. J. Kim, C. G. Kim and **S. Bhowmik**, The Effect of Simulated Hypervelocity Impact on MWNT reinforced CFRP Composite induced by Simulated LEO Space Environment, 2nd Indo Swiss Bonding International Symposium, 11-13 Feb 2010, Sikkim, India.
- N. Bhatnagar, S. Jha, **S. Bhowmik**, A. Choudhury and N. K. Bhattacharya, Surface Modification for Adhesion Enhancement on Nano Adhesive Bonded High Performance Polymer, 2nd Indo Swiss Bonding International Symposium, 11-13 Feb 2010, Sikkim, India.
- J. B. Moon, I. J. Kim, C. G. Kim and **S. Bhowmik**, Effects of LEO Environment Factors on ILSS of MWNT Reinforced CFRP Composites, *Journal of Materials Korea* (KSAS08 3127), 394-397.
- M. Akram, **S. Bhowmik**, K. M. B. Jansen and L. J. Ernst, Surface Modification of Polyimide by Atmospheric Pressure Plasma for Adhesive Bonding with Titanium and its Application to Aviation and Space, SAMPE Europe, 31st International Technical Conference and Forum, Paris, France, April 12-14, 2010.
- S. Ahmed, **S. Bhowmik**, D. Chakraborty, and S. Mukherjee, A Novel Approach For The Fabrication of High Performance Titanium Laminate For Aerospace Application, *12th World Conference on Titanium*, Beijing, China.
- S. Mondal, **S. Bhowmik**, and R. K. Khandal, Influence of Multi Walled Carbon Nanotube on Thermal Conductivity of Polypropylene Glycol, “Advances in Polymer Science and Rubber Technology (APSRT 2011); Challenges towards 2020 and beyond” Indian Institute of Technology Kharagpur.
- **S. Bhowmik (Invited Author)**, Performance of Space Durable Polymeric Nano Composite under Space Radiation at Geosynchronous Earth Orbit, International Conference on RADIATION PROCESSING: Value addition for Food, Agro, Healthcare and Other Industrial Products during (2010) New Delhi, India.
- S. Jha, N. Bhatnagar and **S. Bhowmik** Adhesion Enhancement and Thermal Properties of Nano Adhesive Bonded High Performance Polymer, International Conference on Recent Advances in Chemical Sciences, Pt. Ravishankar Shukla University, Raipur, India (2010).
- **S. Bhowmik (Invited Author)**, Characterization of Ultra High Temperature Resistant Polymer for Space Applications, National Workshop on Recent Advances in Thermal Analysis of Polymers and Composites at Indian Institute of Technology, April 01-02, 2011.
- R. Pradhan, **S. Bhowmik** and R. K. Khandal, “Investigation on Nylon 66 Silicate Nanocomposites Modified under Gamma Radiation”, *Advances in Polymer Science and Rubber Technology (APSRT 2011); Challenges towards 2020 and beyond*, Indian Institute of Technology (IIT) Kharagpur, India.
- S. Mondal, **S. Bhowmik** and R. K. Khandal, “Influence of Multi Walled Carbon Nanotube on Thermal Conductivity of Polypropylene Glycol”, *Advances in Polymer Science and Rubber Technology (APSRT 2011); Challenges towards 2020 and beyond*, Indian Institute of Technology (IIT) Kharagpur, India.
- Sabbir Ahmed, Ayan Dey, Alphonsa Joseph, Ghanshyam Jhala, Subrata Mukherjee, Debabrata Chakraborty, *Shantanu Bhowmik*, “A Novel Approach For The Fabrication of High Performance Titanium Alloy Laminate For Aerospace Application.”, *The 12th World Conference on Titanium 2011*, Beijing, China.
- J. B. Moon, M. G. Kim, C. G. Kim and **S. Bhowmik**, Improvement of tensile properties of CFRP composites under LEO space environment by applying MWNTs and thin-ply, *Composites, Part A* **42** (2011), 694-701.

- H. M. S. Iqbal, **S. Bhowmik**, R. Benedictus, J. B. Moon, C. G. Kim and A. H. I. Moured, Processing and Characterization of Space-Durable High Performance Polymeric Nanocomposites, *Journal of Thermophysics and Heat Transfer of American Institute of Aeronautics and Astronautics*, Vol. 25, Number 1 (2011), 87-95.
- N. Bhatnagar, **S. Bhowmik**, S. Jha, D. Pyngrope, R. Pradhan, V. T. Bui and H. W. Bonin, Electron Beam Modification of Space Durable Polymeric Nano Adhesive Bonding of Ultra High Temperature Resistant Polymer, in *Journal of Polymer Engineering*. Vol. 30, Issue 4, 381-386 (2011).
- **S. Bhowmik (Invited Speaker)**, Characterization of Ultra High Temperature Resistant Polymer for Space Application, National Workshop on Recent Advances in Thermal Analysis of Polymers and Composites, Rubber Technology, Centre, Indian Institute of Technology, Kharagpur, April 01-02, 2011.
- N. Bhatnagar, S. Jha and **S. Bhowmik**, Physico-Chemical Characterization of Polyether Ether Ketone Modified by Low and Atmospheric Pressure Plasma, *Journal of Surface Engineering and Applied Electrochemistry* Vol. 48, No. 2, pp. 117–126 (2012).
- M. Akram, L. Leo and **S. Bhowmik**, Atmospheric Pressure Plasma Modification of Titanium for High Temperature Adhesive Bonding, *International Journal of Adhesion and Adhesives* Vol 31, Issue 7, Pp. 598-604 (2011).
- R. Pradhan, A. S. Bhattacharyya, N. Pramanik, R. S. Halder, U. K. Niyogi, R. K. Khandal and **S. Bhowmik**, Investigation on Nylon 66 Silicate Nanocomposites Modified under Gamma Radiation, Vol 32, Issue 6-7, 379-388, *Journal of Polymer Engineering* (2012).
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