

Proposal for Research Internship

I am looking for a long research internship after completing my graduation in Metallurgical and Materials Engineering from Indian Institute of Technology, Roorkee, ending in May, 2015. I am interested in an internship extending from 6 months to a maximum of 8 months beginning from May, 2015. I have been involved in the following projects:

- **Mitacs Globalink Program - Canada, Nanostructure engineering of solution processed solar cells @ University of Alberta, Edmonton, Canada.** Summer Research Internship May-July, 2014.
- **Development of gasoline vapour sensors using tin oxide Nano-particles** under **Dr. Vijaya Aggarwala** (Prof. & Head, Center of Nanotechnology). Highlights:
 - ✓ Synthesis of stannous oxide Nano-particles on alumina substrate
 - ✓ Fabrication of heater and electrodes on substrate
 - ✓ Selectivity and stability analysis
- **Development of graphene nano-platelets based transparent super-hydrophobic sprays** under **Dr. Indranil Lahiri** (Assistant Professor, Metallurgical & Materials Engineering). Highlights:
 - ✓ Synthesis of Reduced Graphene Oxide from graphite
 - ✓ Preparation of colloidal solution of RGO
 - ✓ Characterization of surfaces sprayed with RGO colloid
- **SURA 2013 - Biodegradable PMC's as an alternative for petrochemical plastics** under **Dr. B.S.S. Daniel** (Assoc. Prof. MMED) & **Dr. Inderdeep Singh** (Assoc. Prof. MIED). Highlights:
 - ✓ Fabrication of Biodegradable PMC's of PLA
 - ✓ Comparison of Mechanical Properties
 - ✓ Biodegradability Analysis
- **Project Leader of "e - ICS" : Electronic Incident Command System Project** under **Dr. Ajay Gairola** (H.O.D., Center of Excellence in Disaster Mitigation & Management, IIT Roorkee). Highlights:
 - ✓ Decision Support System for Emergency Management
 - ✓ Ensures systematic flow of information during an incident
 - ✓ Offers learning opportunities in areas of Software Development, Task Force Management, and Disaster Management & Mitigation

Apart from the above mentioned areas, I am also interested to work in the following fields:

- **Energy storage materials for fuel cell applications** -
Dye-sensitized solar cells
- **Shape Memory Materials - Nano-composites**

Publications & Patents:

- Applying for two patents: - **Energy Efficient Stable Ethanol Sensor & - Microgap Welding Equipment**
- Singhal, A.V., Chandra, K., Agarwala, V., **Development of tin oxide films - insensitive to saturated aliphatic hydrocarbons.** Presented at Nano and Giga Challenges in Electronics, Photonics and Renewable Energy, Phoenix, Arizona, March 10-14, 2014.
- Singhal, A.V., Debnath, K., Singh, I., Daniel, B.S.S., **Mechanical and morphological characterization of thermoset and thermoplastic matrix composites.** JRPC. Under Submission.
- Sharma, R.K., Gurjar, B.R., Singhal, A.V., Ghuge, S.P., Wate, S.R., Agarwal, R., **Emergency reponse plan and preparedness for petrochemical industries: Lessons from the Indian Oil Corporation Ltd. Jaipur accident.** Journal of process safety and environmental protection, Elsevier. Under submission.
- Singhal, A.V., Jha, A., Gairola, A., 2013 (9-11 July). **Networking Solution for disaster management ot address liaison failures in emergency response.** 3rd International Conference on Disaster Management and Human Health: Reducing Risk, Improving Outcomes, A Coruna, Spain. WIT Transactions on Information and Communication Technologies, 47, To be published, 2014.

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