PRATIK KUMAR RAY
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CAREER OBJECTIVES:

Short Term: Seeking admission to PhD program in Materials Science and Engineering
Research Focus: Nanomaterials, metallic glasses, structure of liquids, physics of materials, thermodynamics, phase transitions and mechanical behavior
Long Term: Seeking a position in an academic institution with the aim of contributing through research and teaching

EDUCATION:

MTech. Indian Institute of Technology Madras (2006, expected)
CGPA (after 2 semesters): 9.03/10.0 (class rank: 2nd/15)
Thesis: Theoretical Investigations on Glass Formation in Metallic Systems (Advisors: Prof B.S. Murty and Prof. K. Chattopadhyay)

BTech. National Institute of Technology Rourkela, 2004
1st Class with honors (83.92%) (class rank 1st/42)
Thesis: Effect of thermal spikes and thermal shocks on the hygrothermal behavior of GFRP composites (Advisor: Dr. B.C. Ray)

KEY COURSES:

Graduate Level	Undergraduate Level
Advanced Thermodynamics	Phase Transformations
Applied Magnetics	X-ray and Metal Physics
X-Ray Diffraction	Computer Programming and Numerical Methods
Solidification Phenomena	Fracture Mechanics and Failure Analysis
Mechanical Behavior of Materials	Physical Metallurgy

RESEARCH EXPERIENCE (THESES AND SHORT TERM PROJECTS)

8. Theoretical Investigations on Glass Formation in Metallic Systems (August 2005 – present) Advisor – Prof. B.S. Murty and Prof. K. Chattopadhyay
   work being carried out in partial fulfillment of the requirements for the award of the degree of Master of Technology, at Indian Institute of Technology Madras

7. Mechanical milling of nickel Silicides (May 2005 – July 2005)
   Advisor – Prof. Kamanio Chattopadhyay
   Work carried out in Indian Institute of Science under a visiting summer student fellowship program of the Indian Academy of Sciences.

6. Effect of humidity fluctuations on mechanical behavior of hybrid polymer composites (May – July 2004) Advisor – Dr. B.C. Ray
   work carried out at National Institute of Technology Rourkela

5. Effects of thermal shocks and thermal spikes on the hygrothermal behavior of GFRP composites (August 2003 – April 2004) Advisor – Dr. B.C. Ray
   work carried out in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology, at National Institute of Technology Rourkela

4. Hydrothermal behavior of GFRP composites (February 2004 – April 2004) Advisor – Dr. B.C. Ray
   work carried out at National Institute of Technology Rourkela

3. Studies on the undercooling of a Ni-P binary alloys (May 2003 – July 2003) Advisor – Prof. Kamanio Chattopadhyay
   work carried out at Indian Institute of Science, Bangalore under the student summer research fellowship scheme of the Indian Academy of Sciences

2. Fatigue crack growth retardation by spot heating (November 2002 – February 2003) Advisors – Dr. P.K. Ray and Prof. B.B. Verma
   work carried out at National Institute of Technology Rourkela

1. Effect of process parameters on hardness during annealing (May 2002 – June 2002) Advisor – Mr. K.P. Singh
   work carried out at Rourkela Steel Plant, as a part of industrial internship

AWARDS AND CAREER HIGHLIGHTS

- **Summer Research Fellowship for students – 2005** of the **Indian Academy of Sciences**

- **Institute gold medal** for the best undergraduate dissertation thesis amongst all branches of engineering at NIT Rourkela for the session 2003-2004

- **Institute silver medal** for best graduate in Metallurgical & Materials Engineering for the batch of 2004

- **MEA gold medal** for standing first in class, batch of 2004

- **Summer Research Fellowship for students – 2003** of the **Indian Academy of Sciences**

- Awarded **1st prizes** in both the sessions of Elixir (Confluence 2K4), a national level technical symposium for students, for presenting the papers entitled **"Rapid Solidification of Metallic Melts"** and **"Structure and Properties of Metallic Glasses"** (January 2004).

- Awarded **3rd prize** at a national level students conference for presenting the paper entitled "**Novel Intermetallic Compounds: Quasicrystals**" at **inter NIT Techfest, 2003**.

- Secured **15th position** in **Regional Mathematics Olympiad** (Orissa), **November 1997**.

PROFESSIONAL AFFILIATIONS:

1. Life Member – Materials Research Society of India
2. Member – Material Advantage, IIT Madras Chapter (covering student membership of ASM, TMS, ACerS, AIST)

Pratik Kumar Ray
Graduate Student, IIT Madras

PUBLICATIONS (JOURNALS)

4. S. Mula, T. Bera, **P. K. Ray**, B. C. Ray, "*Effect of hydrothermal aging on mechanical behavior of sub-zero weathered GFRP"*, accepted in **Journal of Reinforced Plastics and Composites**
3. B. C. Ray, T. Bera, S. Mula, **P. K. Ray**, "*Prior thermal spikes and thermal shocks on the mechanical behavior of glass fiber-epoxy composites*", published online in **Journal of Reinforced Plastics and Composites** on 16th August 2005. doi:10.1177/0731684405056446
2. P.K. Ray, **P.K. Ray** and B.B. Verma, "*A study on spot heating induced fatigue crack growth retardation*", **Fatigue and Fracture of Engineering Materials and Structures** 28 (2005) 579
1. **P.K. Ray**, "*On the number 495: A number similar to Kaprekar constant*", **Pi Mu Epsilon Journal** 11 (2002) 241

ARTICLES UNDER PREPARATION/COMMUNICATED

3. **P.K. Ray** and B.S. Murty, "*Thermodynamics of binary glasses: phase selection between glasses, solid solutions and intermetallics*", article under preparation
2. **P. K. Ray**, S. Mula and B. C. Ray, "*Effect of hygrothermal shock cycles on interlaminar shear strength of hybrid composites*" communicated to **Journal of Materials Science Letters**
1. S. Mula, **P. K. Ray**, T. Bera, B. C. Ray, "*Effect of prior thermal spikes and thermal shocks on the hygrothermal behavior of glass-polyester composites*", communicated to **Composites Science & Technology**

CONFERENCE PROCEEDINGS

2. **P.K. Ray**, P.K. Ray, V. Sundar Raja, B.S. Murty and K. Chattopadhyay, "*Process Modeling and development of a horizontal vibratory rod mill for mechanical alloying*", to appear in Proc. of Emerging Tends in Nano Technology, NIT Rourkela, February 2006
1. **P.K. Ray**, A. Bhushan, R. Ranjan, T. Bera, S. Vadhera, U. Mohanty and B.C. Ray, "*Mechanical behavior of hygrothermally conditioned FRP composites after thermal spikes*", Proc. Emerging Trends in Structural Mechanics and Composites, NIT Rourkela, November 2003, 322-332

CONFERENCE PRESENTATIONS

2. S. Mula, B.C. Ray and **P.K. Ray**, "*Assessment of interlaminar shear strength of a hybrid composite subjected to a fluctuating humid environment*", International Symposium of Research Students, IIT Madras
1. R. Ranjan, A. Bhushan, **P.K. Ray**, U. Mohanty, T. Bera and B.C. Ray, "*Chemistry of Environmental degradation of fiber-reinforced polymeric composites*", Annual Technical Meeting of Indian Institute of Metals, Kolkata, November 2003

STUDENT SYMPOSIA (UNDERGRADUATE LEVEL)

6. **P.K. Ray** and U. Mohanty, "*Modeling of chemical potentials and career densities in a homogeneous semiconductor as a function of temperature*", Elixir-Confluence 2004, NIT Rourkela, January 2004
5. **P.K. Ray**, "*Rapid solidification processing of metallic melts*", Elixir-Confluence 2004, NIT Rourkela, January 2004 (best paper award)
4. **P.K. Ray** and A, Bhushan, "*Structure and properties of metallic glasses*", Elixir-Confluence 2004, NIT Rourkela, January 2004 (best paper award)
3. U. Mohanty, R. Ranjan, **P.K. Ray**, A. Bhushan, T. Bera and S. Vadhera, "*Hygrothermal conditioning of thermally shocked and thermally spiked glass fiber*

reinforced epoxy matrix composites", COMPOSIT 2004, IIT Kharagpur, January 2004

2. **P.K. Ray** and A. Bhushan, "*Novel intermetallic compounds: Quasicrystals*", Inter-NIT Techfest, NIT Rourkela, February 2003 (2nd prize)
1. **P.K. Ray** and A. Bhushan, "*High Temperature Superconductors: A brief overview*", COMPOSIT 2003, IIT Kharagpur, January 2003