

# Rahul Bhattacharya



Indian Institute of Technology Madras - Deakin University Australia

PhD Scholar, Enrolment no: MM15D019  
Department of Metallurgical and Materials Engineering,  
Indian Institute of Technology Madras

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## Research Objective:

Material Scientist having unique combination of work experience, collaborative research, academic and team working skill. Seeking challenging opportunity to deliver results while further developing research capability and international collaborations

## Education:

**Master of Technology, Indian Institute of Technology, Madras** July 2013- July 2015  
Metallurgical and Materials Engineering  
CGPA: 8.30/10.00

**Collaborative Master Thesis Research at Deakin University, Australia** January- June 2015

**Bachelor of Technology, National Institute of Technology, Raipur** July 2006- June 2010  
Metallurgical and Materials Engineering  
CGPA: 8.21/10.00 First Division.

**Central Board of Secondary Education , India**  
Scored **80.0%** in CBSE 12<sup>th</sup> standard Board examinations **2006**  
Scored **92.8%** in CBSE 10th standard Board examinations **2004**

## Research Expertise :

**Inorganic synthesis:** Sol-gel technique of nanoparticle synthesis

**Processing:** Spark Plasma Sintering, Ball milling, Mechanical alloying, Dip coating, Spin coating, Etching, Welding, Brazing, Soldering, Surface modification by atmospheric pressure plasma unit.

**Characterization:** X-Ray Diffraction (XRD) , Thermogravimetric analysis (TGA) , Differential scanning calorimetry(DSC), Dilatometry, Goniometer, Surface profilometer, Fourier

transformed infra-red radiation spectroscopy (FTIR) , Dielectric constant measurement , Selective Area diffraction(SAD), Glow discharge Optical Spectroscopy

**Microscopy:** Bright field and Dark field Optical Microscopy, Scanning Electron Microscopy (EDS and EBSD), Transmission Electron Microscopy, Metallography

**Testing:** Universal testing machine, Hot plate equipment (for calculation of thermal conductivity), Flexural Testing, Non destructive testing (Liquid penetrant, Ultrasonic, Magnetic-particle, Radiographic, Eddy-current testing)

**Lab equipment :** Cryostats, Vacuum pumps, Gas lines and glassware, Magnetic stirrer, ultrasonic stirrer, Muffle furnace, Centrifuge.

**Data analysis:** X-ray pattern modelling , Design expert 8.0, Image J software, Peak-shape fitting

## Research Experience:

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1. Ongoing PhD Thesis Research with Prof B. S Murty at IIT Madras and Dr Daniel Fabijanic at Deakin University, Australia **Sept 2015- Ongoing**  
  
Area of Research ***“Mechanism of Oxidation of AlCoCrFeNi high entropy alloys”***  
  
International Collaboration of  
**IIT Madras- Deakin University Australia for Joint Supervision Doctoral Program**
2. Master Thesis Research with Prof B. S Murty, IIT Madras and Prof Peter Hodgson and Dr Daniel Fabijanic at Deakin university, Australia **June 2014- June 2015**  
  
Area of Research ***“High temperature oxidation studies on Al<sub>x</sub>CoCrFeNi high entropy alloy”***  
  
International Collaboration of  
**IIT Madras- Deakin University Australia for Joint Supervision Master Program**
3. Research Associate with Professor Srinivasa Rao Bakshi , IIT Madras, **Feb 2014- Dec 2014**  
Worked on project sponsored by GE Global Research, Bangalore  
  
Area of research ***“Comparative study of erosion behaviour of Graphite reinforced Silver metal matrix composite (95 % silver + 5 % graphite mixture) made through Spark Plasma Sintering and Press-sintering.”***
4. Research Assistant with Professor Rahul Mitra, IIT Kharagpur **June 2009- July 2009**  
Area of research ***“Evaluation of wear properties of Al-4.5Cu-TiB<sub>2</sub> in situ composite processed by multiple roll passes in mushy state.”***
5. Undergraduate Thesis Research with Professor Manoj Chopkar , **August 2009-May 2010**  
National Institute of Technology, Raipur.  
Area of research ***“Synthesis and characterization of Ni-Ti-Mo ternary shape memory alloys and determination of the properties of the alloy.***

## Professional Experience:

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**Teaching Assistant at Indian Institute of Technology Madras** **Sept 2015-Sept 2017**

Teaching, Laboratory instructions, Invigilation duty during examination, Assignment evaluation

**University Lecturer at Deakin University Australia** **January 2015-June 2015**

Teaching and collaborative research work on oxidation behaviour of high entropy alloys.

## List of Patent and Publication:

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**Patent Id: ID1377** (Application no: Indian Patent 201641011314)

**Invention:** High temperature oxidation resistant nanocrystalline high entropy alloys and preparation method thereof.

**Inventors:** **Rahul Bhattacharya**, B.S. Murty, M. Kamaraj, Daniel Fabijanic, Peter Hodgson

**Journal Publication:**

**Title:** 'Enhancement of Microwave Absorption Properties of Epoxy by Sol Gel Synthesized ZnO Nanoparticles'

**Authors:** Shaila Thakur, **Rahul Bhattacharya**, Swati Neogi and Sudarshan Neogi Journal: Indian Chemical Engineer (Manuscript Id: TICE-2015-0021.R1)

## Achievements:

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1. Secured First prize in many paper and poster presentations in techno-management events like Composit at IIT Kgp and Eclectika at NIT Raipur.
2. Qualified Graduate Aptitude Test for Engineering 2013 and All India Engineering entrance examination 2006, which are world's one of the most competitive entrance exams for postgraduate and undergraduate studies, with more than 10 lakh students competing .
3. Secured All India Rank 27 in Junior Mathematics Olympiad 2003-2004.
4. Secured State Rank 41 in 7<sup>th</sup> National Science Olympiad.
5. Secured MHRD scholarship for M Tech at IIT Madras.
6. Held All India Rank 19 and state Rank 6 in A.I.S.S.E conducted by CBSE board and was awarded by Indian Railways for it.

## Contact Address:

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**Permanent residential address:**

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