

**Name**

Dr. Joydip Joardar

**Designation**

Scientist-E

**Qualification**

B.E.(Metallurgy), M.Tech, Ph.D.(IIT-Kharagpur)

**Experience**

BK21 Research Fellow, Ceramic Metal Composite Lab, Department of Materials Engineering, Seoul National University, South Korea;

Rhone-Alpes Fellow and Maître-Assistant Associé/Guest Scientist at Laboratoire Plasticité, Endommagement et Corrosion des Matériaux (CNRS - UMR 5146), Ecole Nationale Supérieure des Mines, France

**Research areas of interest**

Nanomaterials (metals, intermetallics, ceramic composites, chalcogenides, WS<sub>2</sub>-solid lubricants, cermets); Powder Metallurgy (conventional, mechano-chemical synthesis, sintering); X-ray diffraction (conventional and micro-area XRD, Rietveld refinement)

**List of journal publications (selected 10 in past 10 years)**

1. M.S. Archana, V.V.S.S. Srikanth, S.V. Joshi, J. Joardar, "Influence of applied pressure during field-assisted sintering of Ti(C,N)-WC-FeAl based nanocomposite," Ceramics International 41 (2015) 1986-1993.
2. M.S. Archana, R.C. Gundakaram, Y.S. Rao, V.V.S.S. Srikanth, S.V. Joshi, J. Joardar, "Rapid consolidation of FeAl-Fe<sub>3</sub>AlC<sub>x</sub> ultrafine composites by mechanically activated field-assisted technique," Materials Science & Engineering A 611 (2014) 298-305.
3. K.M. Reddy, T.N. Rao, J. Joardar "Stability of nanostructured W-C phases during carburization of WO<sub>3</sub>" Materials Chemistry and Physics (2012)
4. K. Murugan, S.B. Chandrasekhar, J. Joardar "Nanostructured  $\alpha/\beta$ -tungsten by reduction of WO<sub>3</sub> under microwave plasma" International Journal of Refractory Metals and Hard Materials 29 (2011) 128-133.
5. M.S. Archana, N. Hebalkar, K. Radha and J. Joardar "Phase formation during mechanically activated annealing of Cr-40at.%Al" Journal of Alloys and Compounds 501 (2010) 18-24

6. K.M. Reddy, T.N. Rao, J. Revathi, J. Joardar  
“Structural stability of  $\alpha/\beta$ -Mo<sub>2</sub>C during thermochemical processing”  
Journal of Alloys and Compounds, 494 (2010) 386-391
7. K.M. Reddy, T.N. Rao, K. Radha, J. Joardar  
“Nanostructured tungsten carbide by thermochemical processing”  
Journal of Alloys and Compounds, 494 (2010) 404-409
8. J. Joardar, S.K. Pabi, B.S. Murty  
“Milling criteria for the synthesis of NiAl by mechanical alloying”  
Journal of Alloys and Compounds, 429 (2007) 204-210
9. J. Joardar, S.W. Kim, S. Kang  
“GI-XRD studies on surface structure of ultrafine Ti(CN)-WC-Ni cermets at high temperature”  
Wear, 261 (2006) 360-366
10. J. Joardar, R.Y. Fillit and A. Fraczkiewicz  
“A study of thermal vacancies and dislocation structure in Fe-40at.%Al”  
Philosophical Magazine Letters, 85 (2005) 299-309

### **List of patents**

1. J. Joardar and M. Sylvester  
“A novel method for the synthesis of tungsten disulfide nanosheets”  
Indian Patent application 1703/DEL/2012
2. P.V.V. Srinivas and J. Joardar  
“A reactor design for synthesis/thermal processing of sulfides and other corrosive materials”  
Indian Patent application (to be filed)

### **Conference/Workshop Presentation (selected 10 in past 10 years)**

1. M.S. Archana, M. Ramakrishna, P. Chandran, V.V.S.S. Srikanth, S.V. Joshi, J. Joardar  
“Synthesis of nanocrystalline FeAl and its role as a binder in Ti(C,N) based nanocomposites”  
ICONSAT 2012 (January 20-23, 2012)  
Hyderabad, India
2. M. Sylvester, N. Hebalkar, J. Joardar  
“Carbon-doped nanostructured WO<sub>3</sub> by mechanically activated processing”  
ICONSAT 2012 (January 20-23, 2012)  
Hyderabad, India

3. B.V. Mahesh, R.K. Singh, C.C. Koch, J. Joardar, S.V. Joshi  
“Oxidation resistance of bimodal Fe-Cr alloys having controlled dispersion of microcrystalline grains in a nanocrystalline matrix”  
Corrosion and Prevention 2012: Annual Conference of the Australasian Corrosion Association (November 11-14, 2012)  
Melbourne, Australia
4. J. Joardar  
Invited Lecture series at Workshop on Rietveld refinement  
Department of Metallurgical and Materials Engineering, IIT-Madras, May 26-28, 2011  
Chennai, India
5. M.S. Archana, M. Sylvester, J. Joardar  
“Development of nano-tribomaterials for tool inserts: Role of high energy ball milling”  
Invited presentation at the Discussion Meeting on “Present understanding and future prospects of phase and microstructure evolution in severe plastic deformation processes” Indian Academy of Sciences (February 20-22, 2011)  
Coorg, India
6. M.S. Archana, N. Hebalkar, K. Radha and J. Joardar  
“Cr<sub>5</sub>Al<sub>8</sub> and Cr<sub>2</sub>AlC phases by mechanically activated annealing”  
ISRS 2010, IIT-Madras (December 20-22, 2010)  
Chennai, India.
7. M.S. Archana, N. Hebalkar, K. Radha and J. Joardar  
“Nanocrystalline Cr-Al-C MAX phase by mechanically activated annealing”  
AP State Science Congress and Annual Convention of AP Akademy of Science (APSC2010), JNTU-Hyderabad (November 18-20, 2010)  
Hyderabad, India.
8. S. Pal, J. Joardar and J.M. Song  
“Surface Modified Activated Carbon Filter for Enhanced E. coli Removal: Performance over Extended Use”  
The Pittsburg Conference on Analytical Chemistry and Applied Spectroscopy (PITTCO 2007) (February 25-March 2, 2007)  
Chicago, USA.
9. H. Kwon, J. Joardar and S. Kang  
“Sintering behavior of nanocrystalline (Ti,W)C-Ni powders”  
1<sup>st</sup> UT-SNU-TU Workshop on Nanomaterials, Univ. of Tokyo (November 10-11, 2005)  
Tokyo, Japan.
10. J. Joardar  
“Studies on surface, interface and atomic defects by XRD for tribo-mechanical evaluation of cermets and intermetallics”  
Invited lecture, TECSN-CNRS, Faculté des Sciences et Techniques de St Jerome, Université Paul Cezanne (Aix-Marseille III) (May 18, 2005)  
Marseille, France.

### **Affiliation to Professional bodies**

1. Member, The Minerals, Metals and Materials Society (TMS), USA
2. Member, American Ceramics Society (ACerS), USA
3. Life Member, Indian Institute of Metals (IIM)
4. Life Member, Materials Research Society of India (MRSI)
5. Life Member, Indian Crystallographic Association (ICA)
6. Life Member, Powder Metallurgy Association of India (PMAI)
7. Life Member, Tribology Society of India (TSI)

### **Awards and honors**

1. Journal reviewer for Metallurgical and Materials Transaction A and B, Journal of Materials Processing Technology, Materials Chemistry and Physics, Journal of Alloys and Compounds, Journal of Nanoparticles Research, Chemical Engineering Journal, Micron, Powder Technology, Wear, Surface Coatings Technology, Transaction (of IIM), Philosophical Magazine, RSC Advance, etc.
2. Adjudged “Best Reviewer” by Journal of Materials Processing Technology (SCI, Elsevier)-2011
3. Recognized as PhD guide (external) in Metallurgical Engineering by Andhra University
4. Received ‘Rhône-Alpes’ Fellowship from Région Rhône-Alpes Fédération, France (2003).
5. Received ‘BK21 Fellowship from the Ministry of Education, South Korea (2000-2002, 2005-2006).

### **Contact information**

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