

Scientist/Officers biodata

a. **Name:**

Dibyendu Chakravarty

b. **Qualification:**

M.Tech (IT-BHU); PhD in Materials Science (IISc Bangalore)

c. **Designation:**

Scientist-D

d. **Contact information**

Center for Nanomaterials

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e. **Experience:**

12 years

f. **Research Areas of Interest:**

- Synthesis and consolidation of nanomaterials
- Processing of ceramics
- Spark plasma sintering of ceramic and composite materials
- Energy materials, supercapacitors
- Water purification from heavy metals

g. **List of Journal Publications:**

1. Dibyendu Chakravarty, S. Roy, P.K. Das.
DC resistivity of alumina and zirconia sintered with TiC.
Bulletin of Materials Science. 28[3], 227-231, 2005.

2. N.V Rama Rao, R.Gopalan, M. Manivel Raja, V.Chandrasekharan,
D.Chakravarty, R.Sundaresan, R.Ranganathan, K.Hono
Structural and magnetic studies on spark plasma sintered SmCo₅/Fe bulk
nanocomposite magnets.
Journal of Magnetism and Magnetic Materials. 312, 252-257, 2007.

3. Dibyendu Chakravarty, Prakash Singh, Sindhu Singh, Devendra Kumar,
Om Parkash
Electrical conduction behavior of high dielectric constant perovskite oxide
La_xCa_{1-3x/2}Cu₃Ti₄O₁₂
Journal of Alloys and Compounds. 438, 253-257, 2007.

4. D.Roy, D.Chakravarty, R.Mitra, I.Manna
Effect of sintering on microstructure and mechanical properties of nano-TiO₂

dispersed $\text{Al}_{65}\text{Cu}_{20}\text{Ti}_{15}$ amorphous/nanocrystalline matrix composite.
Journal of Alloys and Compounds. 460,320-325, 2008.

5. Dibyendu Chakravarty, S. Bysakh, K.Muraleedharan, Tata N Rao, R. Sundaresan
Spark Plasma Sintering of Magnesia-Doped Alumina with High Hardness and Fracture Toughness.
Journal of the American Ceramic Society. 91[1], 203-208, 2008

6. Dibyendu Chakravarty, H.Ramesh, Tata N.Rao
High strength porous alumina by spark plasma sintering.
Journal of the European Ceramic Society. 29, 1361-1369, 2009.

7. R.Mazumder, D.Chakravarty, D.Bhattyacharya, A.Sen
Spark plasma sintering of BiFeO_3 .
Materials Research Bulletin. 44, 555-559, 2009.

8. Dibyendu Chakravarty, G. Sundararajan
Effect of Applied Stress on IR transmission of Spark Plasma-Sintered Alumina.
Journal of the American Ceramic Society. 93[4],951-953, 2010.

9. A.Mukhopadhyay, Dibyendu Chakravarty, B.Basu
Spark Plasma Sintered $\text{WC-ZrO}_2\text{-Co}$ Multi Phase Nanocomposites with High Fracture Toughness and Strength
Journal of the American Ceramic Society. 93[6], 1754-1763, 2010

10. K.Rajeswari, U.S.Hareesh, Dibyendu Chakravarty, R.Subasri, Roy Johnson
Comparative evaluation of SPS, MW and TTS on the density and microstructure evaluation of stabilized ZrO_2 ceramics.
Science of Sintering. 42, 259-67, 2010

11. Amit S Sharma, K.Biswas, B.Basu, Dibyendu Chakravarty
Spark Plasma Sintering of nanocrystalline Cu and Cu-10 wt % Pb
Metallurgical and Materials Transactions A. 42[7], 2072-84, 2011

12. Dibyendu Chakravarty, B. V. Sarada, S.B. Chandrasekhar, K.Saravanan, T.N.Rao
A novel method of fabricating porous silicon.
Materials Science and Engineering A. 528 (25-26), 7831-34, 2011.

13. Dibyendu Chakravarty, Hina Gokhale, G. Sundararajan
Optimizing mechanical properties of spark plasma sintered ZTA using neural network and genetic algorithm
Materials Science and Engineering A. 529, 492-96, 2011.

14. B.Suresh, K.Rajeswari, Dibyendu Chakravarty, D.Das, R.Johnson
Effect of nano grain size on the ionic conductivity of spark plasma sintered
8YSZ electrolyte
International Journal of Hydrogen Energy. 37 (1), 511-517, 2012

15.S.Shalini, P.Sandhyarani, Y.S.Rao, D.Chakravarty, R. Subasri
Wet chemical synthesis and characterization of Na⁺ conducting sodium
dysprosium silicates
Ceramics International. 38 (1), 295-300, 2012.

16. M.J.Anjali, P.Biswas, D. Chakravarty, U.S.Hareesh, Y.S.Rao, R.Johnson
Low temperature in-situ reaction sintering of zircon-alumina composites through SPS.
Science of Sintering. 44, 323-330, 2012

17. Dibyendu Chakravarty, G. Sundararajan
Microstructure, mechanical properties and machining performance of spark
plasma sintered Al₂O₃-ZrO₂-TiCN nanocomposites.
Journal of the European Ceramic Society. 33, 2597-2607, 2013.

18. R.Papitha, M. Buchi Suresh, D. Chakravarty, A Swarnakar, D.Das, R.
Johnson
Eutectoid decomposition of aluminum titanate (Al₂TiO₅) ceramics under
spark plasma sintering (SPS) and conventional (CRH) thermal treatments
Ceramics International. 40, 659-66, 2014.

19. Dibyendu Chakravarty, Atul Chokshi.
Direct Characterizing of Densification Mechanisms during Spark Plasma Sintering
Journal of the American Ceramic Society, 97[3], 765-71, 2014.

20. S. Varam, PVSL Narayana, MD Prasad, D. Chakravarty, K.V. Rajulapati, Bhanu
Sankara Rao
Strain rate sensitivity of bulk multiphase nanocrystalline Al-W-based alloy
Phil. Mag. Letter, 94[9], 582-91, 2014.

21. P.Saravanan, V.T.P Vinod, M.Cernek, D. Chakravarty, P.Ghoshal, S.V.Kamat
Exchange coupled rare earth free Mn-Al/Fe nanocomposite magnets by SPS
Materials Letters, 137, 369-72, 2014.

22. P.Saravanan, V.T.P Vinod, M.Cernek, A. Selvapriya, D. Chakravarty, S.V.Kamat
Processing of Mn-Al nanostructured magnets by SPS and subsequent rapid thermal
annealing
Journal of Magnetism and Magnetic Materials, 374, 427-32, 2015.

23. Dibyendu Chakravarty, Atul Chokshi
Influence of Ytria and Zirconia Additions on Spark Plasma Sintering of Alumina Composites
Journal of Materials Research, 30[8], 1148-56, 2015.

24. Dibyendu Chakravarty, C.S.Tiwary, L.D.Machado, G.Brunetto, S.Vinod, R.M.Yadav, D.S.Galvao, S.V.Joshi, G.Sundararajan, P.M.Ajayan
Zirconia nanoparticle reinforced, morphology engineered graphene based foam
Advanced Materials, 27, 4534-43, 2015.

25. Mohan Nuthalapati, S.K.Karak, **Dibyendu Chakravarty**, A. Basu
Development of nano-Y2O3 dispersed Zr alloys by mechanical alloying and spark plasma sintering
Materials Science and Engineering A, 650, 145-153, 2016

26. P. Barick, **Dibyendu Chakravarty**, B.P. Saha, R. Mitra, S.V.Joshi
Effect of pressure and temperature on densification, microstructure and mechanical properties of spark plasma sintered silicon carbide processed with β -silicon carbide nanopowder and sintering additives
Ceramics International, 42[3], 3836-48, 2016

27. P.Sahani, S.K.Karak, B.Mishra, **Dibyendu Chakravarty**, D. Chaira
Effect of Al addition on SiC-B4C cermet prepared by pressureless sintering and spark plasma sintering methods
International Journal of Refractory Metals and Hard Materials, 57, 31-41, 2016

28. Rishu Kumar, Kushal Singh, **Dibyendu Chakravarty**, Anirban Chowdhury
Attaining near-theoretical densification in nanograined pyrochlore La2Zr2O7 (LZ) ceramic at 1150°C by spark plasma sintering
Scripta Materialia, 117, 37-40, 2016

29. P.Sahani, S.K.Karak, B.Mishra, **Dibyendu Chakravarty**, D. Chaira
A comparative study on SiC-B4C-Si cermet prepared by pressureless sintering and spark plasma sintering methods
Metallurgical and Materials Transactions A, Accepted in press

h. List of Patents:

1. Novel ceramic materials having improved mechanical properties, a process for its preparation and a process for making cutting tools of such materials, IN200503396-11
2. An improved method of preparing porous silicon compacts, patent filing no 912 Delhi 2011.

i. Affiliation to Professional societies:

- Member of the American Ceramic Society
- Life member of Indian Institute of Metals (IIM)
- Life member of Materials Research Society of India (MRSI)

j. Awards & Honors:

- Master of Technology Gold medal, Banaras Hindu University, 2003
- Selected for the Indo-US Science and Technology Research Fellow for the year 2014.

k. Invited lectures:

1. PMSC-12 at MGIT on December 22, 2012 entitled “SPS of ceramic and metallic systems for structural and functional applications”
2. CEP-50 at DMRL, Hyderabad on July 9, 2013 entitled “SPS: An emerging technique for developing structural and functional components”

l. Photograph

