

**a. Name:** Dr. R. Vijay

**b. Qualification:** M.Tech., Ph.D.

**c. Designation:** Scientist-G and Team Leader

**d. Contact information:**

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**e. Experience:**

He worked at Non Ferrous Materials Technology Development Centre (NFTDC) as an Assistant Project Manager from 1992 to 1994 on development and setting up of a pilot plant facility for “Extraction of Molybdenum from Molybdenite Concentrate”. After joining International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI) as a scientist in 1994, he has been working on Heat Pipe based Heat Transfer devices, Mechanical Alloying, Hydrogen Storage Materials, Nanostructured Materials, Oxide Dispersion Strengthened Steels and Simoloyer Technology. He has immense interest in using Mechanical Alloying as a technique to produce materials for critical technologies. Presently he is holding Scientist ‘G’ position and Head of Centre for Nanomaterials at ARCI.

**f. Research Areas of Interest:**

Nanostructured materials, High Kinetic Processing (Mechanical Alloying), Oxide Dispersion Strengthened Materials, Li-ion Battery Materials, Supercapacitors, Powders for Additive Manufacturing, Powder Metallurgy, Biomaterials and Hydrogen Storage Materials.

**g. Awards and Honours:**

1. FTCCI Excellence Award – 2016-17 for Individual achievement in Science and Engineering (Chelikani Atchut Rao Award) from Federation of Telangana Chamber of Commerce and Industry
2. Fellow of Telangana Academy of Sciences in recognition of his contributions to Science and Technology from Telangana Academy of Sciences, 2018
3. Indo-US Fellowship for working at Department of Materials, University of California, Santa Barbara, USA, under Prof. G.R. Odette. Aug. 2010 – Feb 2011.
4. “Engineer of the Year 2007” award from Andhra Pradesh state government and Institution of Engineers, Hyderabad Centre.
5. DST-DAAD fellowship for working at IKE, University of Stuttgart, Germany, under Prof. M. Groll. Aug 2005 – Nov 2005.

#### **h. List of Journal Publications:**

1. A. H. V. Pavan, K. Sowmya, B. Ramesh Chandra. M. Swamy, R. Vijay and Kulvir Singh, Characterization and mechanical behavior of mechanically milled and hot extruded oxide dispersion strengthened steel, *Materials Today: Proceedings* (2020) <https://doi.org/10.1016/j.matpr.2020.08.479>
2. D. Chakravarty, N. Laxman, R. Jayasree, R.B. Mane, S. Mathiazhagan, P.V.V. Srinivas, R. Das, M. Nagini, M. Eizadjou, L. Venkatesh, N. Ravi, D.R. Mahapatra, R. Vijay, S.P. Ringer and C.S. Tiwary, Ultrahigh transverse rupture strength in tungsten-based nanocomposites with minimal lattice misfit and dual microstructure, *Int J Refractory Metals and Hard Mater.* 95 (2021) 105454
3. D. Spandana, H. Desai, D. Chakravarty, R. Vijay and K. Hembram, Fabrication of a biodegradable Fe-Mn-Si alloy by field assisted sintering, *Adv. Powder Tech.* 31 (2020) 4577-4584
4. Rahul B. Mane, R. Vijay, Bharat B. Panigrahi and D. Chakravarty, High temperature decomposition kinetics of  $Ti_3GeC_2$  MAX phase, *Mater. Letters* 282 (2021) 128853.
5. S. Sudhakar Sarma, J. Joardar, R. Vijay and Tata N Rao, Preparation and characterisation of nano boron by cryo milling, *Adv. Powder Tech.* 31 (2020) 3824-3832.
6. B.V. Sarada, R. Vijay, R. Johnson, T. Narsinga Rao, G. Padmanabham, Fight against COVID-19: ARCI's technologies for disinfection, *Trans Indian National Academy of Engg.* 5 (2020) 349–354
7. M. Nagini, K.G. Pradeep, R. Vijay, A.V. Reddy, B.S. Murthy, G. Sundararajan, A combined electron microscopy, atom probe tomography and small angle X-ray scattering study of oxide dispersion strengthened 18Cr ferritic steel, *Mater. Char.*, 164 (2020) 110306
8. P.V. Durga, K. Satya Prasad, S.B. Chandrasekhar, A.V. Reddy, S.R. Bakshi and R. Vijay, “Microstructural and mechanical properties of oxide dispersion strengthened iron aluminides produced by mechanical milling and hot extrusion”, *J Alloys Compd.* 834 (2020) 155218.
9. N.S. Anas, L. Rama Krishna, R.K. Dash and R. Vijay, “Tribological performance of CNT/Ni coated CNT dispersed–Al alloys produced by Mechanical Milling and Extrusion”, *J Mater. Engg. Performance*, 29 (2020) 1630-1639.
10. S. Kavita, G. Anusha, Pramod Bhatt, V. Suresh, R. Vijay, K. Sethupathi and R. Gopalan, “On the giant magnetocaloric and mechanical properties of Mn–Fe–P–Si–Ge alloy”, *J Alloys Compd.* 817 (2020) 153232.
11. N.S. Anas, M. Ramakrishna and R. Vijay, “Microstructural characteristics and Mechanical Properties of CNT/ Ni coated CNT–dispersed Al alloys produced by High Energy Ball Milling and Hot Extrusion”, *Metal Mater. Int.* 26 (2020) 272-283.
12. S Sudhakara Sarma, Satya Prasad, Joydip Joardar, K Suresh, A V Reddy and R Vijay, “Nanocrystalline ODS-iron aluminide by cryo-milling: Consolidation, microstructure and mechanical behaviour”, *Mater. Res. Express*, 6 (2019) 106572

13. N.S. Anas, S.B. Chandrasekhar, R.K. Dash, Tata N Rao and R. Vijay, “Effect of Carbon nanotubes on Solution Treatment Temperature and Dissolution Characteristics of Precipitates in Al alloy produced by High Energy Milling and Hot Extrusion”, *Trans Indian Inst Met.* 72 (10) (2019) 2687-2697
14. N.S. Anas, R.K. Dash, Tata N Rao and R. Vijay, Influence of Process Control Agents on Microstructure and Mechanical Properties of Al-Cu-Mg Alloy produced by Mechanical Alloying, *Mater. Sci. Eng. A*, 751 (2019) 171-182
15. M. Nagini, R. Vijay, Koteswararao V. Rajulapati, A.V. Reddy and G. Sundararajan, “Microstructure-mechanical property correlation in oxide dispersion strengthened 18Cr ferritic steel”, *Mater. Sci. Eng. A*, 708 (2017) 451-459.
16. J. Rajesh, R. Vijay, S. Ganesh Sundara Raman and G. Sundararajan, Hot deformation behavior of n-ODS-18Cr steel, *Procedia Eng.* 207 (2017) 191-196.
17. N.S. Anas, R.K. Dash, Tata N. Rao, and R. Vijay, “Effect of Carbon Nanotubes as Reinforcement on the Mechanical Properties of Aluminum-Copper-Magnesium Alloy”, *J Mater. Engg. Performance*, 26 (2017) 3376-3386.
18. K. Suresh, M. Nagini, R. Vijay, M. Ramakrishna, Ravi C. Gundakaram, A.V. Reddy and G. Sundararajan, “Microstructural studies of oxide dispersion strengthened austenitic steels”, *Mater. Design*, 110 (2016) 519-525.
19. M. Nagini, R. Vijay, Koteswararao V. Rajulapati, K. Bhanu Sankara Rao, M. Ramakrishna, A.V. Reddy and G. Sundararajan, “Effect of process parameters on microstructure and hardness of oxide dispersion strengthened 18Cr ferritic steel”, *Metall Mater. Trans. A*, 47 (2016) 4197-4209.
20. M. Nagini, A. Jyothirmayi, R. Vijay, Tata N. Rao, A.V. Reddy, Koteswararao V. Rajulapati, and G. Sundararajan, “Influence of dispersoids on corrosion behavior of oxide dispersion strengthened 18Cr steels made by high-energy milling”, *J Mater. Engg. Performance*, 25 (2016) 577-586.
21. A. Bhadauria, L. K. Singh, A.R. Ballal and R. Vijay, “Effect of Yttria Dispersion on Creep Properties of Pure Iron”, *Trans Indian Inst Met.* 69 (2016) 253-259.
22. S. Santra, S. Amirthapandian, A. J. London, B. K. Panigrahi, R.M. Sarguna, S. Balaji, R. Vijay, C. S. Sundar and C. Grovenor, “Effect of Ti and Cr on dispersion and structure of oxide nano-particles in model ODS alloys”, *Acta Mater.* 97 (2015) 223-233.
23. M. Nagini, R. Vijay, M. Ramakrishna, A.V. Reddy and G. Sundararajan, “Effect of duration of milling on microstructural and mechanical properties of ODS-9Cr steel”, *Mater. Sci. Eng. A*, 620 (2014) 490-499.
24. R. Vijay, A.V. Reddy and G. Sundararajan, “Development of oxide dispersion strengthened steels for next generation power plants”, *Nanotech Insights*, 5 (2014) 66-70
25. R. Vijay, M. Naginin, S.S. Sarma, M. Ramakrishna, A.V. Reddy and G. Sundararajan, “Structure and properties of nano scale oxide dispersed iron”, *Metall Mater. Trans. A*, 45 (2014) 777-784.
26. G. Sundararajan, R. Vijay and A.V. Reddy, “Development of 9Cr ferritic-martensitic and 18Cr ferritic oxide dispersion strengthened steels”, *Current Science*, 105 (2013) 1100-1106.

27. R. Vijay, M. Nagini, J. Joardar, M. Ramakrishna, A.V. Reddy and G. Sundararajan, "Strengthening mechanisms in mechanically milled oxide-dispersed iron powders", *Metall Mater. Trans. A*, 44A (2013)1611-1620.
28. Kaliyan Hembram, R. Vijay, Y.S. Rao and T.N. Rao, "Doped nanocrystalline ZnO powders for Non-linear Applications by Spray Pyrolysis method", *J Nanoscience and Nanotechnology*, 9, (2009) 4376-4382.
29. P. Muthukumar, M.P. Maiya, S. Srinivasa Murthy, R. Vijay and R. Sundaresan, "Tests on mechanically alloyed Mg<sub>2</sub>Ni for hydrogen storage", *J. Alloys Compd.* 452 (2008) 456-461.
30. R. Vijay, R. Sundaresan, M.P. Maiya, S. Srinivasa Murthy, "Application of Mg-x wt% MmNi<sub>5</sub> nanostructured composites in a hydrogen storage device", *Int. J Hydrogen Energy* 32 (2007) 2390-2399.
31. R. Vijay, R. Sundaresan, M.P. Maiya, S. Srinivasa Murthy, "Hydrogen storage properties of Mg - Cr<sub>2</sub>O<sub>3</sub> nanocomposites: The role of catalyst distribution and grain size", *J Alloys Compd.* 424 (2006) 289-293.
32. R. Vijay, R. Sundaresan, M.P. Maiya and S. Srinivasa Murthy, "Comparative evaluation of Mg-Ni hydrogen absorbing materials prepared by mechanical alloying", *Int. J Hydrogen Energy*, 30 (2005) 501-508.
33. R. Vijay, R. Sundaresan, M.P. Maiya, S. Srinivasa Murthy, Y. Fu, H.-P. Klein, and M. Groll, "Characterisation of Mg-x wt.% FeTi (x = 5-30) and Mg-40 wt.% FeTiMn hydrogen absorbing materials prepared by mechanical alloying", *J Alloys Compd.* 384 (2004) 283-295.
34. D.Sivaprahasam, G.Sivakumar, R.Vijay and R. Sundaresan, 'Mechanically Alloyed Fe-SiC Powder for Detonation Spray Coating', in "Trends in Mechanical Alloying", P.R.Soni and T.V. Rajan, Editors, Oxford & IBH Publishing, New Delhi, Kolkata, 2002, pp. 84-95.

***i. List of patents:***

1. Heat pipe based solar grain dryer – Indian Patent granted (No: 184674)
2. Heat pipe based solar cooking device – Indian Patent granted (No: 184675)
3. S. Anandan, P.M. Pratheeksha, R. Vijay and Tata N. Rao, A method of producing high performance lithium titanate anode material for lithium ion battery applications, **Indian Patent Application No. E-2/1972//2017/DEL dated 27<sup>th</sup> December 2017.**
4. S. Anandan, P.M. Pratheeksha, R. Vijay and Tata N. Rao, A method of producing high performance lithium titanate anode material for lithium ion battery applications, **Inventors: on PCT International Application No. PCT/IN2018/050080 dated 17.02.2018.**
5. Dibyendu Chkarvarty, P.V.V. Srinivas and R. Vijay, Method of fabricating tungsten based composite sheets by spark plasma sintering technique for making components, **Indian Patent Application No. 201911008605 dated 6.03.2019.**
6. S. Anandan, P.M. Pratheeksha, R. Vijay and Tata N. Rao, A method of producing high performance lithium titanate anode material for lithium ion battery

applications, **US Patent Application No. 16463088 dated 23<sup>rd</sup> May 2019** based on PCT International Application No. PCT/IN2018/050080 dated 17.02.2018.

7. S. Anandan,, P.M. Pratheeksha, R. Vijay and Tata N. Rao, A method of producing high performance lithium titanate anode material for lithium ion battery applications, **Japan Patent Application No. 2019-520394 dated 14<sup>th</sup> May 2019** based on PCT International Application No. PCT/IN2018/050080 dated 17.02.2018.
8. S. Anandan,, P.M. Pratheeksha, R. Vijay and Tata N. Rao, A method of producing high performance lithium titanate anode material for lithium ion battery applications, **Chinese Patent Application No. CN201880004507 dated 28<sup>th</sup> May 2019** based on PCT International Application No. PCT/IN2018/050080 dated 17.02.2018.
9. S. Anandan, P.M. Pratheeksha, R. Vijay and Tata N. Rao, A method of producing high performance lithium titanate anode material for lithium ion battery applications, **Germany Patent Application No. 2019062815041700DE dated 28<sup>th</sup> June 2019** based on PCT International Application No. PCT/IN2018/050080 dated 17.02.2018.
10. S. Anandan, P.M. Pratheeksha, R. Vijay and Tata N. Rao, A method of producing high performance lithium titanate anode material for lithium ion battery applications, Inventors: **South Korea Patent Application No. 10-2019-7019218 dated 2<sup>nd</sup> July 2019** based on PCT International Application No. PCT/IN2018/050080 dated 17.02.2018.S. Sudhakar Sarma, R. Vijay and T.N. Rao, Process for producing the nano boron by cryo milling, **Indian Patent Application No. 201911025690 dated 27/06/2019**
11. S. Sudhakar Sarma, R. Vijay and T.N. Rao, Process for producing the nano boron by cryo milling, **Indian Patent Application No. 201911025690 dated 27/06/2019**
12. Mani Karthik, R. Vijay, Tata N. Rao, A method of producing porous particles-fibres carbon composite for supercapacitor applications and the product thereof, **Indian Patent Application No. 2020110227265 dated 26/06/2020**
13. P. Vijaya Durga, S. Sudhakara Sarma, K. Satya Prasad, A.V. Reddy, R. Vijay, Oxide dispersion strengthened iron aluminides with high strength and ductility and method of preparation of the same, **Indian Patent Application No. 202011044124 dated 09/10/2020**
14. S. Anandan, R. Vijay and Tata N. Rao, Method of producing in-situ carbon coated lithium iron phosphate iron phosphate cathode material for lithium-ion batteries and the product thereof, **Provisional Indian Patent Application No. 202011056608 dated 28/12/2020**

***j. Conference Proceedings:***

1. R. Vijay, R. Sundaresan, M.P. Maiya and S. Srinivasa Murthy, “Hydrogen Storage Characteristics of Magnesium-Aluminium Compounds Prepared by Mechanical Alloying”, *Proceedings International Hydrogen Energy Congress and Exhibition IHEC 2005*, Istanbul, Turkey, 13-15 July 2005.

2. R. Vijay, R. Sundaresan, G.V.N. Rao, M.P. Maiya and S. Srinivasa Murthy, "Sorptions characteristics of Mg-x wt% MmNi<sub>5</sub> (x = 10-50) nanostructured composites prepared by mechanical alloying", *Proceedings International Conference on Solid State Hydrogen Storage – Materials and Applications*, 31 Jan-1 Feb 2005, Hyderabad, India.

**k. Affiliation to Professional societies:**

Life member of : Powder Metallurgy Association of India (PMAI)  
Institution of Engineers, Hyderabad Chapter  
Indian Institute of Metals (IIM)  
Materials Research Society of India (MRSI)  
Telangana Academy of Sciences (TAS)

**l. Other Responsibilities:**

1. Member, Board of Studies, School of Engineering Sciences & Technology, University of Hyderabad
2. Member, Board of Studies, College of Technology, Osmania University, Hyderabad

**m. Photograph**

