

Personal Profile

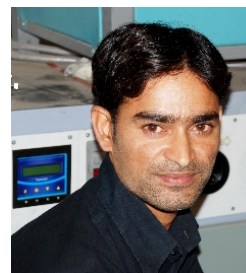
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Educational Qualification:

- Doctor of Philosophy (Materials Engineering): National Institute of Technology-Warangal
- Master of Engineering (Prod. Engineering, discontinued): College of Engineering, Osmania University, Hyderabad
- Bachelor of Technology (Mechanical Engineering): Kakatiya University, Warangal

Professional Experience:

- Scientist-E (2020-till date), ARCI, Hyderabad
- Scientist-D (2015- 2020), ARCI, Hyderabad
- Scientist-C (2010-2015), ARCI, Hyderabad.
- Scientist-B (2006-2010), ARCI, Hyderabad.

Areas of Research Interest:

Current research includes synthesis, characterization and applications of

- Low-dimensional carbon materials (graphene platelets, carbon nanotubes, graphene oxide, carbon spheres and expanded graphite-derivatives)
- Highly aligned carbon nanotube arrays (N-doped and pure) for field emission
- Electrode materials for supercapacitor and Li-ion capacitor
- Nanoadditives for lubrications for reducing wear and friction
- Thermally conductive additives-loaded phase change materials for thermal management of battery system
- Phase change materials for solar-thermal energy storage and conversion

- Thermal interface materials

Scientific Publications (Journals and Proceedings):

1. Facile synthesis of multidimensional nanoscaled-carbon via simplified arc underwater: An integrated process for 0-D, 1-D, and 2-D, R. Kali, **Balaji Padya**, G.V.Ramana, P.K.Jain, Nano-structures & Nano-Objects 26 (2021)100684.
2. Insights into Na-ion storage behavior of solid-waste derived carbon via charge-averaged discharge/charge voltages, R. Kali, S. Miriyala, **Balaji Padya**, T.N.Rao, P.K.Jain, ACS Energy and Fuels 35 (6)(2021) 5291-5297.
3. Constructing nanocarbon-loaded precisely phase transition-tuned energy composite eutectics with enhanced thermal conductivity: Nanocarbon's crystallinity-dependent thermal transport, **Balaji Padya**, Akshay, N. Ravikiran, Ravi Kali, B. Bollareddy, N. Narasaiah, P.K. Jain, Materials Today Communication (review).
4. Preparation and electrochemical capacitive properties of multidimensional (1-D and 2-D) nanocarbon-hybridized nitrogen-containing porous carbon for carbon/carbon supercapacitor: Nanocarbon-aided capacitance boosting, **Balaji Padya**, Ravi Kali, N. Ravikiran, N. Narasaiah, P.K. Jain, Colloids and Surfaces A 627 (2021) 127225 (8pp)
5. Facile synthesis and frequency-response behavior of supercapacitor electrode based on surface-etched nanoscaled-graphene platelets, **Balaji Padya**, Ravi Kali, P.K. Enaganti, N. Narasaiah, P.K. Jain, Colloids and Surfaces A 609 (2021) 125587 (8pp)
6. High thermal energy storage and thermal conductivity of few-layer graphene platelets loaded phase change materials: A thermally conductive additive for thermal energy harvesting, **Balaji Padya**, N. Ravikiran, Ravi Kali, N. Narasaiah, P. K. Jain, Energy Storage 2 (6) (2020) 199 (8pp).
7. Xylitol based phase change material with graphene nanoplatelets as filler for thermal energy management, P.K. Varadaraj, D. Sandeep, **Balaji Padya**, P.K.Jain, I. Conf Emerging Trends in Engineering, Learning and Analytics in intelligent system 2 (2020) 551-558.

8. Multifunctional surface-modified ultrathin graphene flakes for thermal and electrochemical energy storage application, **Balaji Padya**, N. Ravikiran, Ravi Kali, N. Narasaiah, P.K. Jain, T.N. Rao, *Materials Today: Proceedings* 26 (2020) 52-57.
9. Constructing graphene-coupled nitrogen-doped carbon-based all-carbon hybrid for hybrid Li-ion supercapattery: An investigation and insight into “charge-averaged” charge/discharge voltage analysis, **Balaji Padya**, Ravi Kali, N. Ravikiran, N. Narasaiah, P.K. Jain, *Journal of Alloys and Compounds* 872 (2021) 159660 (9pp).
10. A controlled process of atomic-scale material design via temperature-mediated grain refinement of NiCo₂O₄ rods for capacitive energy storage, **Balaji Padya**, P.K. Enaganti, Ravi Kali, N. Ravikiran, N. Narasaiah, P.K. Jain, *J Science: Advanced Materials and Devices* 5 (2020) 173-179.
11. Modified activation process for supercapacitor electrode materials from African maize cob, M. Kigozi, R. Kali, A.Bello, **Balaji Padya**, G.M. Kalu-Uka, J Wasswa, P.K.Jain, *Materials* 13 (23) (2020) 5412.
12. Solid-waste derived carbon as anode for high performance lithium-ion batteries, R. Kali, **Balaji Padya**, T.N.Rao, P.K.Jain, *Diamond and Related Materials* 98 (2019) 107517.
13. A facile co-solvent strategy for preparation of graphene nanoplatelet powder: An industrially viable innovative approach, **Balaji Padya**, N. Narasaiah, P.K. Jain, T.N. Rao, *Ceramics International* 45 (2019) 13409-13413.
14. Oxidation of 2D-WS₂ nanosheets for generation of 2D-WS₂/WO₃ heterostructure and 2D and nanospherical WO₃, H.K. Adigili, **Balaji Padya**, L.Venkatesh, VSK Chakravadhanula, A.K Pandey, *Phys Chem Chem Phys* 21 (45) (2019)25139-25147.
15. Effect of 1-D carbon nanotube loading on dispersion and mechanical properties of epoxy nanocomposite materials, S. Pochaiiah, **Balaji Padya**, A. Krishnaiah, *International Journal of modern engineering and research Technology* 5 (2018)5-10.
16. Ultrathin 2D carbon material as engine oil additive for studying antifriction and antiwear behavior, N. Ravikiran, **Balaji Padya**, P.K.Jain, A. Krishnaiah,

- International Journal of modern engineering and research Technology 5 (2018) 19-30.
17. Ni nanoparticles prepared by simple chemical method for the synthesis of Ni/NiO-multilayered graphene by chemical vapor deposition, M. Ali, N. Remali, G.V. Gedela, **Balaji Padya**, P.K. Jain, A. Al-Fateh, U.A. Rana, V.V.S.S. Srikanth *Solid state Sciences* 64 (2017) 34-40.
 18. Preparation and characterization of graphene nanoplatelets integrated polyaniline based conducting nanocomposites, M.R. Tokala, **Balaji Padya**, P.K. Jain, C.H.S. Chakra, *Superlattices and Microstructure* 82 (2015) 287-292.
 19. Electrochemically active polyaniline (PANi) coated carbon nanotubes and PANi nanofibers containing composites, G.V. Ramana, P.S. Kumar, V.V.S.S. Srikanth, **Balaji Padya**, P.K. Jain, *J Nanoscience and Nanotechnology* 15 (2) (2015) 1338-1343.
 20. Rapid mixing chemical oxidative polymerization: An easy route to prepare PANI coated small diameter CNTs/PANI nanofibers composite thin film, G. Venkata Ramana, **Balaji Padya**, V.V.S.S. Srikanth, P.K. Jain, *Bulletin of material science* 37 (3) (2014) 585-588.
 21. Carbon nanotube-polyaniline nanotube core-shell structure for electrochemical Applications, Venkata Ramana G, Srikanth VVSS, **Balaji Padya**, P.K. Jain *European polymer journal* 57 (2014) 137-142.
 22. Nanoelectron emitters for vacuum electron devices, K. Santosh Kumar, Meduri Ravi, K.S. Bhat, Lalit Kumar, J.S. Rawat, P.K. Chaudary, P.K. Jain and **Balaji Padya**, *Nanotech Insights* 5 (3 and 4) (2014) 94-97.
 23. Nitrogen incorporated highly aligned carbon nanotube arrays thin film grown from single feedstock for field Emission, **Balaji Padya**, Dipankar Kalita, P.K. Jain, G. Padmanabham, M. Ravi, K.S. Bhat, *J Nanoelectronics and Optoelectronics*. 8 (2) (2013) 177-181.
 24. Characterization of intermediates in the synthesis of reduced graphene-oxide through sequential de-oxygenation, A.K. Mishra, C. Srinath, P.K. Jain, **Balaji Padya**, M. Chopkar, *Nano Trends: A Journal of Nanotechnology and Its Applications*: 14(2) (2013) 1-9.

25. Influence of nitrogen doping concentration on morphology and microstructure of nitrogen doped super-aligned carbon nanotube forest, AVB Subramanyam, **Balaji Padya**, PK Jain, J advanced microscopy 8, 300-304 (2013).
26. Surface modification effect on the thermal and mechanical properties of multi-walled carbon nanotubes / epoxy nanocomposites, G.V. Ramana, **Balaji Padya**, P.K.Jain, IEEE proceedings 978-1-4673-0074-2/11 (2013) 110-113.
27. Highly ordered nitrogen doped carbon nanotube novel structures of aligned carpet for enhanced field emission properties, **Balaji Padya**, P.K. Jain, G.Padmanabham, M Ravi, K.S.Bhat, AIP Conf. Proc. 1538 (2013) 196-199.
28. Role of buffer gas pressure on the synthesis of carbon nanotubes by arc discharge Method, Manikantan Kota, **Balaji Padya**, G. V. Ramana, P.K. Jain, G. Padmanabham, AIP Conf. Proc. 1538 (2013) 200-204.
29. Thermal properties of Multi-walled carbon nanotube-graphite nanosheets/epoxy Nanocomposites, G. Venkata Ramana, **Balaji Padya**, Vadali V.S.S. Srikanth, P.K. Jain, AIP Conf. Proc. 1538 (2013) 205-208.
30. Synthesis of amorphous carbon nanofiber using iron nanoparticles as catalyst. Mokhtar Ali, G.Venkata Ramana, **Balaji Padya**, VVSS Srikanth, PK Jain AIP Conf. Proc. 1538 (2013) 237.
31. Morphological, structural and phase characteristics of conventionally sintered MWCNT/Cu composites, R.Naresh Kumar, **Balaji Padya**, SB Chandrasekhar, PK Jain VVSS Srikanth, K.Bhanushankara Rao, IEEE Conf. Proc. 978-1-4799-4/13 (2013) 190-192.
32. Self organized growth of bamboo like carbon nanotube arrays for the field emission Properties, **Balaji Padya**, Dipankar Kalita, P.K. Jain, G.Padmanabham, M.Ravi, K.S. Bhat, Applied Nanoscience: 2 (2012)253-259.
33. Carbon nanotubes-graphite nanosheets/ polyaniline conducting polymer nanocomposites, P.K. Jain, **Balaji Padya**, G.Venkata Ramana, G. Padmanabham Nanotech Insight, 3(1) (2012) 21-22.
34. Thermal and mechanical properties of multiscale carbon nanotubes and carbon fiber reinforcement in epoxy hybrid nanocomposites, P.K. Jain, **Balaji Padya**, P.S.

- Rao, K Mohana Krishna Chowdary, B. Ashwani Kumar, G.Anusha, J Nanostructured Polymer and Nanocomposites: 7/3 (2011) 81-86.
35. Electrically conductive carbon nanopipe-graphite nanosheet/polyaniline composites, G. V. Ramana, **Balaji Padya**, Vadali V.S.S. Srikanth , P.K. Jain, G. Padmanabham, G. Sundararajan, Carbon 49 (2011) 5239 -5245.
36. Purification of multi-walled carbon nanotubes synthesized by arc discharge set-up, Y.Malathi, **Balaji Padya**, K.V.P Prabhakar, P.K. Jain, Carbon Letter: 11 (3) (2010) 184-191.
37. Mechanical properties of multi-walled carbon nanotubes reinforced polymer nanocomposites, G. V. Ramana, **Balaji Padya**, R. Naresh Kumar, K.V.P. Prabhakar, P.K. Jain, Indian Journal of Advanced Engineering and Materials Sciences: 17 (2010) 331-337.
38. Production of hydrogen and carbon nanofibers through the decomposition of methane over activated carbon supported Pd catalysts, J. Sarada Prasad, Vivek Dhand, V. Himabindu, Y. Anjaneyulu, P. K. Jain, **Balaji Padya**, International Journal of Hydrogen Energy: 35 (2010)10977-10983.
39. Synthesis of vertically aligned carbon nanotube arrays by injection method in CVD, **Balaji Padya**, K.V.P.Prabhakar, P.K.Jain, J Nanoscience Nanotechnology 10 (8) (2010) 4960-4966.
40. Dispersion and rheological aspects of multiwall carbon nanotubes in polymer matrix, Y.Malathi, G.Raj Kiran, **Balaji Padya**, K.V.P. Prabhakar, P.K. Jain, Proceedings of MEMS, NEMS & Nanoengineering TS-205 (2008) 114-117.

Professional Memberships

- Life member of Indian Carbon Society (LM-249), 2009.
- Life member of Materials Research Society of India (LMB-2373), 2014.
- Materials Research Society-Singapore (2015-16)

List of Projects ongoing/completed

- To develop pattern growth of vertically aligned carbon nanotubes for field emission application (DRDO-sponsored)
- Graphene polyaniline composites for energy storage (DST-SERB-sponsored)

- Graphite based seals for cryo-engine applications (ISRO-sponsored)
- Supply of graphene nanoplatelets (M/s Aditya Birla-sponsored)
- Graphite foam with high thermal conductivity (DRDO-sponsored)