

Curriculum Vitae

Name: Balaji Padya

Address: Scientist-D, Centre for Carbon Materials, International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), RCI Road, Balapur Post, Hyderabad- 500 005.

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Education:

- Doctor of Philosophy (Pursuing)
- Bachelor of Technology (Mechanical Engineering)

Research Experience:

- **Scientist-D** (2015- present), ARCI, Hyderabad.
- **Scientist-C** (2010-2015), ARCI, Hyderabad.
- **Scientist-B** (2006-2010), ARCI, Hyderabad.

Research Interests:

Current research includes synthesis, characterization and applications of

- Nanostructured-carbon materials (carbon nanotubes, carbon onions, carbon spheres, graphene oxide, graphene and porous carbon), nanofluids for heat intensification, aligned carbon nanotube arrays for field emission and energy storage materials for supercapacitors etc.
- Graphite intercalated compounds, exfoliated graphite and few layer ultrathin graphene materials
- Graphene hydrogel and aerogel materials
- Heteroatom incorporated carbon nanostructures (graphene and carbon nanotubes)
- Nanostructured-carbon based nanocomposites materials for gas and organic vapor sensing application
- Structural nanocomposite materials (epoxy and phenolic)
- Conducting polymers (polyaniline)
- Redox materials (mixed metal oxides and sulfides etc)
- Nanocarbon incorporated phase change materials for solar thermal energy storage
- 2D- layered materials for friction modifier and wear reduction
- Phase change materials

Journal Publications

- [1]. Synthesis of vertically aligned carbon nanotube arrays by injection method in CVD
Balaji Padya, K.V.P.Prabhakar, P.K.Jain
Journal of Nanoscience and Nanotechnology: 10 (8), 4960-4966, (2010).
- [2]. 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), 184-191 (2010).
- [3]. Mechanical properties of multi-walled carbon nanotubes reinforced polymer nanocomposites
G. Venkata Ramana, Balaji Padya, R. Naresh Kumar, K.V.P. Prabhakar, P.K. Jain
Indian Journal of Advanced Engineering and Materials Sciences: 17, 331-337, (2010).
- [4]. 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, 10977-10983, (2010).
- [5]. 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
Journal of Nanostructured Polymer and Nanocomposites: 7/3, 81-86, (2011).
- [6]. Electrically conductive carbon nanopipe-graphite nanosheet/polyaniline composites
G. Venkata Ramana, Balaji Padya, Vadali V.S.S. Srikanth, P.K. Jain, G. Padmanabham, G. Sundararajan
Carbon 49 ,5239 –5245, (2011).
- [7]. 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, 253–259 (2012).
- [8]. Carbon nanotubes-graphite nanosheets/ polyaniline conducting polymer nanocomposites
P.K. Jain, Balaji Padya, G.Venkata Ramana, G. Padmanabham
Nanotech Insights, Vol.3, Issue.1, 2012, pp. 21-22.
- [9]. 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,
Journal of Nanoelectronics and Optoelectronics. 8 (2), 177-181, (2013).
- [10]. Characterization of intermediates in the synthesis of reduced graphene-oxide through sequential de-oxygenation
A.K. Mishra, C. Srinath, P.K. Jain, B. Padya, M. Chopkar
Nano Trends: A Journal of Nanotechnology and Its Applications: 14(2), 1-9, 2013.
- [11]. Influence of nitrogen doping concentration morphology and microstructure of nitrogen doped super-aligned carbon nanotube forest
Subrahmanyam A.V.B, Balaji Padya, Jain P.K.
Journal of Advanced Microscopy 8 (4), 300-304 (2013).
- [12]. Carbon nanotube-polyaniline nanotube core-shell structures for electrochemical applications
G. Venkata Ramana, V.V.S.S Srikanth, Balaji Padya, P.K. Jain.
European polymer journal, 57, 137-142, (2014).
- [13]. Rapid mixing chemical oxidative polymerization: An easy route to prepare PANI

- coated small diameter CNT/PANI nanofibers composite thin film
 Ramana G.V, Balaji Padya, Srikanth V.V.S.S, P.K. Jain.
 Bulletin of material science 37(3),585-588 (2014).
- [14]. Electrochemically active polyaniline (PANI) coated carbon nanotubes and PANI nanofibers containing composites
 Ramana G.V., Kumar P.S., Srikanth V.V.S.S., Padya B, Jain P.K.
Journal of Nanoscience and Nanotechnology 15(2), 1338-1343 (2015).
- [15]. Preparation and characterization of graphene nanoplatelets integrated polyaniline based conducting nanocomposites
 M.R.Tokala, Balaji Padya, P.K. Jain, Ch. Shilpa Chakra.
Superlattices and microstructures 82, 287-292, 2015.
- [16]. Ni particle prepared by simple chemical method for synthesis of Ni/NiO-multilayered graphene by chemical vapor deposition
 Ali M, Remalli N, Gedela V, B Padya, Jain PK, Ahmed AF, Rana UA, Srikanth VVSS
Solis State Sciences 64, 34-40, 2017
- [17]. Thermal transport aspects of nitrogen-induced defects in densely-packed arrays of 1-D carbon nanotube based microscopic forest-like thin film
 Balaji Padya, A.V.B. Subrahmanyam, P.K.Jain
Advanced materials letters (communicated)

In Proceedings

- [1]. Surface modification effect on the thermal and mechanical properties of multi-walled carbon nanotubes / epoxy nanocomposites
 G.Venkata Ramana, Balaji Padya, P.K.Jain
 IEEE proceedings, 978-1-4673-0074-2/11, 110-113, 2011.
- [2]. 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, 196-199 (2013).
- [3]. Role of buffer gas pressure on the synthesis of carbon nanotubes by arc discharge method
 Manikantan Kota, Balaji Padya, G. Venkata Ramana, P.K. Jain, G. Padmanabham
 AIP Conf. Proc. 1538, 200-204 (2013).
- [4]. 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, 205-208 (2013).
- [5]. Synthesis of amorphous carbon nanofiber using iron nanoparticles as catalyst
 Mokhtar Ali, G. Venkata Ramana, Balaji Padya, V.V.S.S. Srikanth, P.K. Jain
 AIP Conf. Proc. 1538, 237 (2013).
- [6] Morphological, structural and phase characteristics of conventionally sintered MWCNTs/Cu composites

R. Naresh Kumar, Balaji Padya, S.B Chandrasekhar, P.K. Jain, V.V.S.S Srikanth, K. Bhanushankar Rao
IEEE conference proceedings 978-1-4799-1379-4/13, pp 190-192 (2013).

Books chapters and other articles

- [1]. K.Santosh Kumar, M.Ravi, K.S. Bhat, L Kumar, J.S. Rawat, P.K. Chowdhary, P.K. Jain and Balaji Padya
'Nano electron emitter for vacuum devices', Nanotech insights- special issue on nanomaterials and nanocomposites, Vol.5 (3-4), p 94-97, 2014.

Contributions to International/national conferences

- [1]. Synthesis of vertically aligned carbon nanotube arrays by injection method in CVD
Balaji Padya, K.V.P. Prabhakar, P.K.Jain.
International Conference on Nanoscience and Nanotechnology (ICONSAT-2008)
held during Feb. 27-29, 2008. Chennai, India.
- [2]. Purification of multi-walled carbon nanotubes synthesized by arc discharge set-up
Y.Malathi, **Balaji Padya**, KV.P. Prabhakar, P.K. Jain.
International Conference on Nanoscience and Nanotechnology (ICONSAT-2008)
held during Feb. 27-29, 2008. Chennai, India.
- [3]. Grafting of carbon nanotube arrays on carbon fiber/fabric by spray pyrolysis process
Balaji Padya, KV.P. Prabhakar, P.K. Jain
First Asian Carbon Conference (FACC-2009) held during Nov.25-27, 2009. New
Delhi, India.
- [4]. Synthesis of carbon nanomaterials by arc under water
K.V.P. Prabhakar, **Balaji Padya**, P.K Jain
First Asian Carbon Conference (FACC-2009) held during Nov.25-27, 2009. New
Delhi, India.
- [5]. Mechanical properties of multi walled carbon nanotubes reinforced polymer
nanocomposites.
G. Venkata Ramana, **Balaji Padya**, R. Naresh Kumar, KV.P. Prabhakar and P.K Jain
First Asian Carbon Conference (FACC-2009) held during Nov.25-27, 2009. New
Delhi, India.
- [6]. Multi-walled carbon nanotubes reinforced copper matrix nanocomposites
R.Naresh Kumar, **Balaji Padya**, S.B. Chandrasekhar, K.V.P. Prabhakar, P.K. Jain
International Conference on Nanoscience and Technology (ICONSAT-2010) held
during Feb.17-20, 2010. Mumbai, India.
- [7]. Surface modification effect on the thermal and mechanical properties of multiwalled
carbon nanotubes epoxy nanocomposites
G.Venkata Ramana, **Balaji Padya**, P.K.Jain

- International Conference on Nanoscience, Engineering and Technology (ICONSET-2011)* held during Nov. 28-30, 2011. Chennai, India.
- [8]. 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
International Conference on Advanced Nanomaterials and Technology (ICANN-2011) held during Dec. 8-10, 2011. Guwahati, India.
- [9]. Development of flexible conductive paper using carbon nanotubes for energy storage applications
M. Srikanth, **Balaji Padya**, P.K. Jain
International Conference on Nanotechnology and Functional Materials (ICNTFM 2012) held during Jan. 4-7, 2012. Hyderabad, India.
- [10]. A facile method for high yield of graphene nanosheets from exfoliated graphite
S. Raghuram Reddy, **Balaji Padya**, P.K. Jain, G. Padmanabham
International Conference on Nanotechnology and Functional Materials (ICNTFM 2012) held during Jan. 4-7, 2012. Hyderabad, India.
- [11]. Influence of nitrogen content on microstructure and Raman spectrum of bamboo shaped multiwalled carbon nanotube arrays
Balaji Padya, P.K. Jain, G. Padmanabham
International Conference on Nanoscience and Technology (ICONSAT-2012) held during Jan. 20-23, 2012. Hyderabad, India.
- [12]. Aligned carbon nanotube arrays for field emission applications
P.K. Jain, **Balaji Padya**, G. Padmanabham
International Conference on Nanoscience and Technology (ICONSAT-2012) held during Jan. 20-23, 2012. Hyderabad, India.
- [13]. Electrically conductive SWNTs/polyaniline nanofibers composite thin film
G. Venkata Ramana, **Balaji Padya**, V.V.S.S Srikanth, P.K. Jain
European Materials Research Society Conference (EMRS-2012) held during Sept.17-21,2012. Strasbourg, France.
- [14]. 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
National Conference on Carbon Materials (CCM12) held during Nov. 1-3, 2012. Mumbai, India.
- [15]. Role of buffer gas pressure on the synthesis of carbon nanotubes by arc discharge method
Manikantan Kota, **Balaji Padya**, G. Venkata Ramana, P.K. Jain, G. Padmanabham
National Conference on Carbon Materials (CCM12) held during Nov. 1-3, 2012. Mumbai, India.
- [16]. Electrochemical properties of flexible conductive paper using carbon nanotubes for energy storage application

- M. Srikanth, Balaji Padya, P.K. Jain
National Conference on Carbon Materials (CCM12) held during Nov. 1-3,
 2012. Mumbai, India.
- [17]. Thermal properties of multi-walled carbon nanotubes -graphite nanosheets/epoxy nanocomposites
 G.Venkata Ramana, ***Balaji Padya***, Vadali V. S. S. Srikanth, P. K. Jain.
National Conference on Carbon Materials (CCM12) held during Nov. 1-3,
 2012. Mumbai, India.
- [18]. Synthesis of amorphous carbon nanofibers using Iron nanoparticles as catalyst
 Mokhtar Ali, G.Venkata Ramana, ***Balaji Padya***, Vadali V. S. S. Srikanth, P.K.Jain.
National Conference on Carbon Materials (CCM12) held during Nov. 1-3,
 2012. Mumbai, India.
- [19]. Carbon nanotube based highly conductive paper for energy storage
 Mateti Srikanth, ***Balaji Padya***, P.K.Jain.
4th International Conference on Advanced Nano Materials (ANM2012) held during
 Oct.17-19, 2012 IITMadras India.
- [20]. Effect of magnetic field on the synthesis of carbon nanotubes by arc discharge under de-ionized water
 Veldandi Ashok kumar, ***Balaji Padya***, PK Jain
 International Conference on Nano, Bio and Material Science (ICONBMS) held during Jan 8-10, 2014 at Nizam college, Hyderabad
- [22]. Effect of nitrogen doping concentration on morphology and microstructure of nitrogen doped super-aligned carbon nanotube forest
 A.V. B. Subrahmanyam, ***Balaji Padya***, P. K. Jain
International conference on chemical and bio-process engineering (ICCBPE) held during Nov 16-17, 2013 at NIT Warangal.
- [23]. Reduction thermo-kinetics in de-oxygenation of free-standing graphene oxide paper
Balaji Padya, P.K. Jain, G.Padmanabham
International union of material research society- International conference on IUMRS-ICA 2013 held during Dec. 16-20, 2013 at IISC Bangalore.
- [23]. Synthesis of exfoliated graphite through microwave irradiation
 Nagaraju sykam, Balaji Padya, P.K. Jain
International union of material research society- International conference on IUMRS-ICA 2013 held during Dec. 16-20, 2013 at IISC Bangalore.
- [24]. Preparation and characterization of graphene nano-platelets integrated polyaniline

based conducting nanocomposites
Mamata Reddy Tokala, ***Balaji Padya***, P.K. Jain

International Conference on Nano Science and Engineering Applications

(ICONSEA) held during June 26-29, 2015 at JNTU Hyderabad.

- [25]. Enhanced electron emission properties of carbon nanotube microislands generated by femtosecond ultrafast laser patterning for electron gun application

Balaji Padya, Ravi N Bathe, P.K. Jain, G. Padmanabham, K.Santosh Kumar, M.Ravi, K.S. Bhat

International conference on materials for advanced technologies (ICMAT 2015)

held during June 28 to July3, 2015 at Suntec, Singapore.

- [26]. Densely-packed nitrogen doped 1-D carbon nanostructures as nanoemitter: stability issues and failure mechanism

Balaji Padya, P.K.Jain, G.Padmanabham

National conference on Carbon Materials (NCCM2015) held during Nov-26-28, 2015 at New Delhi.

- [27]. Areal site density-controlled growth of nitrogen-enriched highly-organized one-dimensional carbon nanostructures by acetonitrile pyrolysis

Younus MD, ***Balaji Padya***, P.K. Jain

National conference on Carbon Materials (NCCM2015) held during Nov-26-28, 2015 at New Delhi.

- [28] Controllable chemical oxidative polymerization synthesis of electroactive polyaniline supramolecules decorated chemically modified nanostructured graphene for electrochemical capacitive energy storage

Balaji Padya, P.K. Jain, G.Padmanabham.

International conference on Nanoscience, nanotechnology and advanced materials (NANOS2015) held during December 14-17, 2015 at Gitam University, Vishakapatnam.

Balaji Padya, P.K. Jain, G.Padmanabham

Awards and honors

1. A poster titled “electrochemical properties of flexible conductive paper using carbon nanotubes for energy storage applications” was awarded as the “best poster award” in *National Conference on Carbon Materials (NCCM12)* held during Nov. 1-3, 2012. Mumbai, India.

Professional Memberships

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

List of Projects ongoing/completed

S.No	Project title	Funding agency	Amount (Lacs)	Duration (years)	Remarks
1	To develop pattern growth of vertically aligned carbon nanotubes for field emission applications	DRDO	22.25	2	Completed
2	Nanostructured-graphene sheets based composites as electrode material for energy storage applications	DST-SERB	12	2	Completed
3	Graphite based seals for cryo-engine applications	ISRO	4.3	1.5	Completed