

RESUME

Personal Details

Name: **Dr. Ravi Kali**

Designation: **DST-INSPIRE Faculty**

Address:

Center for Carbon Materials,
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Academic Qualifications

Ph. D., Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, India.

Thesis: Understanding the Correlation between Electrochemical Behavior, Phase Transformations and Stress Development in Metallic Film Electrodes for “Alkali Metal-ion Batteries”

M. Tech., Nanotechnology, JNTU Hyderabad, India.

Thesis: Synthesis of Carbon Nanomaterials through Graphite Arc under Water process

M. Sc., Physics, Osmania University, Hyderabad, India.

Research areas of interest

- In-situ monitoring of stress development in electrode materials for batteries
- Nanostructured hybrid materials for metal-ion batteries
- Development of nanocarbons, graphite foam and exfoliated graphite
- Metal oxide/carbon composites for lithium and sodium-ion batteries
- Activated carbon for supercapacitor applications

Honors/Awards

2016: Selected for **ECS Meeting Travel grants** for attending 229th ECS meeting at San Diego, USA

2016: Selected for **DST International travel grants for** attending 229th ECS meeting at San Diego, USA

2017: Awarded **DST Inspire Faculty Award**

Professional Experience

May –Nov 2017: **Research Associate**, Metallurgical Engineering and Materials Science, IIT Bombay

Nov. 2017 – Apr. 2018: **Post-Doctoral Fellow**, Department of Chemical Engineering, IIT Hyderabad

May 2018 - till Now: **DST-Inspire Faculty**, ARCI-Hyderabad

M.Tech Guidance:

D. Vijay Kumar M. Tech (Renewable Energy) JNTU Kakinada completed (2019-20)

Thesis title: Insertion reaction based anode materials for sodium-ion batteries

T.V. Anusha M. Tech (Renewable Energy) JNTU Kakinada in progress (2020-21)

Thesis title: N-doped carbon nanomaterials as anodes for advanced sodium-ion batteries

Ph.D. Guidance:

Kigozi Moses_(Visiting Scholar at ARCI and PhD student at AUST Nigeria) Under Indo-Africa Prog for Stren-Africa Using Reg-IIT Roorke for 6 months

Dr. A. Bello (Visiting Faculty at ARCI and Faculty at AUST Nigeria) Under Indo-Africa Prog for Stren-Africa Using Reg-IIT Roorke for 1 month

Title: Bio-waste derived carbon for electrochemical energy storage applications

Project: Conversion reaction-based transition metal oxide hybrid electrodes for next generation lithium ion batteries

Sponsoring Agency: DST, Govt. of India.

Amount: Rs. 35 Lakhs (Research Grant)

From 07/05/2019 to 06/05/2023

Publications

1. Balaji Padya, **Ravi Kali**, N. Ravikiran, N. Narasaiah, P.K. Jain, "Preparation and capacitive storage properties of multidimensional (1-D and 2-D) nanocarbon-hybridized N-containing porous carbon for carbon/carbon supercapacitor: Nanocarbon-aided capacitance boosting" *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 627 (2021)127225
2. Purnendu Kartikay, Krishnaiah Mokurala, Bosky Sharma, **Ravi Kali**, Nagaraju Mukurala, Dhananjay Mishra, Ajit Kumar, Sudhanshu Mallick, Junyoung Song, Sung Hun Jin, "Recent advances and challenges in solar photovoltaic and energy storage materials: future directions in Indian Perspective" *Journal of Physics: Energy* 3 (2021) 034018
3. T. Rakesh Kumar, CH Shilpa Chakra, S Madhuri , E Sai Ram , **Kali Ravi**, " Microwave-irradiated novel mesoporous nickel Oxide carbon nanocomposite electrodes for supercapacitor application" *Journal of Materials Science: Materials in Electronics* 32 (2021) 20374-20383
4. Balaji Padya, **Ravi Kali**, N. Ravikiran, N. Narasaiah, P.K. Jain, "Constructing graphene-coupled nitrogen-doped carbon-based all-carbon hybrid for Li-ion supercapattery: An investigation and insight into "charge-averaged" charge/discharge voltage analysis" *Journal of Alloys and Compounds* 872 (2021)159660
5. **Ravi Kali**, Shanthi Miriyala, B Padya, T.N. Rao, P. K. Jain, "Insights into Na-ion storage behaviour of solid waste-derived carbon via 'charge-averaged' discharge/charge voltages" *Energy & Fuels* 35 (2021) 5291-5297
6. **Ravi Kali**, Balaji Padya, G. V. Ramana, P. K. Jain, "Facile synthesis of multidimensional nanoscaled-carbon via simplified arc underwater: An integrated process for 0-D, 1-D and 2-D": *Nano-Structures & Nano-Objects* 26 (2021) 100684
7. Moses Kigozi, **Ravi Kali**, Abdulhakeem Bello, Balaji Padya, Godwin Mong Kalu-Uka, John Wasswa, Pawan Kumar Jain, Peter Azikiwe Onwualu, Nelson Yaw Dzade, "Modified Activation Process for Supercapacitor Electrode Materials from African Maize Cob" *Materials* 13 (23) (2020) 5412
8. Balaji Padya, **Ravi Kali**, P. K. Enaganti, Narasaiah N, P.K Jain, "Facile synthesis and frequency-response behavior of supercapacitor electrode based on surface-etched nanoscaled-graphene platelets" *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 609 (2021)125587

9. B Padya, N Ravikiran, **R Kali**, N Narasaiah, PK Jain, “High thermal energy storage and thermal conductivity of surface-modified few-layer graphene platelets loaded phase change materials: A thermally conductive additive for thermal energy harvesting” *Energy Storage* (2020) e199.
10. B Padya, P. K. Enaganti, **R Kali**, N. Ravikiran, N. Narasaiah, P. K. Jain, “A controlled process of atomic-scale material design via temperature-mediated grain refinement of NiCo₂O₄ rods for capacitive energy storage” *Journal of Science: Advanced Materials and Devices* **5** (2) (2020) 173-179
11. B Padya, N Ravikiran, **R Kali**, N Narasaiah, PK Jain, TN Rao, “Multifunctional surface-modified ultrathin graphene flakes for thermal and electrochemical energy storage application” *Materials Today: Proceedings* **26**(1) (2020) 52-57
12. **Ravi Kali**, Balaji Padya, T. N. Rao, P.K. Jain, “Solid waste-derived Carbon as Anode for High Performance Lithium-ion Batteries” *Diamond and Related Materials* **98** (2019)107517.
13. A. Vemulapally, **R. Kali**, T.K. Bhandakkar, A. Mukhopadhyay, “Transformation plasticity provides insights into concurrent phase transformation and stress relaxation observed during electrochemical Li alloying of Sn thin film” *The Journal of Physical Chemistry C* **122**(29) (2018) 16561-16573
14. T. Ramireddy, **R. Kali**, M. K. Jangid, V. Srihari, H. K. Poswal, A. Mukhopadhyay, “Insights into the electrochemical behavior, phase evolution, cyclic stability and mechanical integrity of Sn upon electrochemical K-alloying/de-alloying via *in-situ* studies” *Journal of the Electrochemical Society* **164** (12) (2017) A2360-A2367
15. **Ravi Kali**, Shubham Badjate, Amartya Mukhopadhyay, “Effects of residual stress on overpotentials and mechanical integrity during electrochemical Li-alloying of Al film electrodes” *Journal of Applied Electrochemistry* **47** (2017) 479–486
16. **Ravi Kali**, Yaadhav Krishnan, Amartya Mukhopadhyay, “Effects of phase assemblage and microstructure-type for Sn/intermetallic 'composite' films on stress developments and cyclic stability upon lithiation/delithiation” *Scripta Materialia* **130** (2017) 105-109
17. Manoj K Jangid, Farjana J Sonia, **Ravi Kali**, Balakrishna Ananthoju, Amartya Mukhopadhyay, “Insights into the effects of multi-layered graphene as buffer/interlayer for a-Si during lithiation/delithiation” *Carbon* **111** (2017) 602-616
18. Farjana J Sonia, Balakrishna Ananthoju, Manoj K Jangid, **Ravi Kali**, M Aslam, Amartya Mukhopadhyay, “Insight into the mechanical integrity of few-layers graphene upon lithiation/delithiation via in situ monitoring of stress development” *Carbon* **88** (2016) 206-214
19. Amartya Mukhopadhyay, **Ravi Kali**, Shubham Badjate, Anton Tokranov, Brian W Sheldon, “Plastic deformation associated with phase transformations during lithiation/delithiation of Sn” *Scripta Materialia* **92** (2014) 47-50
20. **Ravi Kali**, Amartya Mukhopadhyay, “Spark plasma sintered/synthesized dense and nanostructured materials for solid-state Li-ion batteries: Overview and perspective” *Journal of Power Sources* **247** (2014) 920 – 931

Selected Conference Presentations

- **Ravi Kali**, Aditya Prasad Vemulapally, Shubham Badjate, Sagar Mitra, Tanmay Bhandakkar, Amartya Mukhopadhyay, **229th ECS Meeting Abstracts, 388-388 (2016)**
- **Ravi Kali**, Shubham Badjate, Sagar Mitra, Amartya Mukhopadhyay, in **ICAER 2015**, Mumbai, India, December 2015.
- **Ravi Kali**, Shubham Badjate, Anton Tokranov, Sagar Mitra, Brian Sheldon, Amartya Mukhopadhyay in **52nd National Metallurgists' day and 68th annual technical meeting - NMD ATM 2014**, Pune, India, November 2014.
- **Ravi Kali**, Amartya Mukhopadhyay in **6th National Symposium for Materials Research Scholars, MR-14**, Mumbai, India, May 2014.
- **Ravi Kali** and Amartya Mukhopadhyay in **IITB-NUS Joint Research Workshop – ENERGY 2014**, Mumbai, India, February 2014.
- **Ravi Kali**, Amartya Mukhopadhyay in **NC2E 2014**, Pune, India, February 2014.
- **Ravi Kali**, A. Jain, A. Shreemal, A. Tokranov, B. W. Sheldon, S. Shukla, S. Mitra and A. Mukhopadhyay, in **ICAER 2013**, Mumbai, India, December 2013.