

## R. PRAKASH

Centre for Automotive Energy Materials (CAEM)  
International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)  
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Date of birth: 24.05.1970

## EDUCATION

### Ph.D. Chemistry (Apr1995–May 1999)

Central Salt & Marine Chemicals Research Institute, BhavnagarUniversity, Bhavnagar,India  
*Thesis title:* Activation of N–N bonds by coordinately unsaturated transition metal complexes and catalytic reduction of nitrogenous compounds in aqueous solution

### M.Phil. Chemistry (Jan 1993–Dec 1994)

Department of Chemistry, BharathiarUniversity, Coimbatore,India  
*Thesis title:* Studies on alpha- and beta-alanine complexes of metal with hydrazine

### M.Sc. Chemistry (May 1990–Dec1992)

Sri Ramakrishna Mission Vidyalaya Arts and ScienceCollege, BharathiarUniversity, Coimbatore,India  
*Thesis title:* A study of jigger dyeing on cotton fabrics and beam dyeing of polyester fabrics

### B.Sc. Chemistry (May 1987–Apr1990)

Sri Ramakrishna Mission Vidyalaya Arts and ScienceCollege, BharathiarUniversity, Coimbatore,India

## PROFESSIONAL EXPERIENCE

### Scientist E (Jun 2014-Present)&Senior Scientist (Jan2012-Jun 2014)

Centre for Automotive Energy Materials (CAEM),ARCI Chennai, India

### Scientist (Dec 2007-Dec 2011)

Karlsruhe Instituteof Technology (KIT), Instituteof Nanotechnology (INT), Karlsruhe,Germany

### Research Scientist (Jul 2004–Nov 2007)

Institute of Organic Chemistry, University of Erlangen-Nuernberg, Erlangen,Germany

### Postdoctoral Research Fellow (Oct 1999–Jun 2004)

Institute of Inorganic Chemistry, University of Erlangen-Nuernberg, Erlangen, Germany

### Provisional Research Associate (Apr 1999–Sep 1999)

Central Salt & Marine Chemicals Research Institute, Bhavnagar,India

### Senior/Junior Research Fellow(Apr 1995–Mar 1999)

Central Salt & Marine Chemicals Research Institute, Bhavnagar,India

## HONOR / AWARD / FELLOWSHIP / MEMBERSHIP

- Jun 2014 Member of The Electrochemical Society (ECS, No: 364500)
- Mar 2011 KIT press released and German TV channel -SWR telecasted my LIB work
- Sep 2010 Inclusion in the 28th Edition of Marquis *Who's Who in the World-2011*
- Jul 2010 Special Poster Award (Nanomaterials in Energy Applications) at ENMAT-2010 conference
- Jul 2009 Research activities telecasted in TV channels (Bayerischen Rundfunks-Alpha & Deutsche Welle (DW))
- Mar 2006 Highlighted Paper in *Chemistry A European Journal*
- Jan 2006 Reviewer for *Electrochimica Acta*; *Inorganic Chemistry*; *Nitric Oxide: Biology and Chemistry*; *Journal of Coordination Chemistry*, etc.
- Jul 2004 Postdoctoral Research Fellowship, Institut für Organische Chemie, Erlangen, Germany
- Jan2004 Very Important Paper (VIP) in *Angewandate Chemistry International Edition*

- Oct 1999 Postdoctoral Research Fellowship, Deutsche Forschungsgemeinschaft, Institut für Anorganische Chemie, Erlangen, Germany
- Apr 1999 Provisional Research Associate, Council of Scientific & Industrial Research, New Delhi
- Apr 1997 Senior Research Fellowship, Council of Scientific & Industrial Research, New Delhi
- Apr 1995 Junior Research Fellow, Central Salt & Marine Chemicals Research Institute, Bhavnagar
- Dec 1994 Distinction status for M.Phil. Thesis, Bharathiar University, Coimbatore
- Apr 1991 Academic Proficiency Award in M.Sc., SRKMV Arts College, Bharathiar University, Coimbatore
- Apr 1990 Academic Proficiency Award in B.Sc., SRKMV Arts College, Bharathiar University, Coimbatore

## PROJECT HANDLED/HANDLING

### ARCI CI, Chennai (2012-present)

- Development of Li-ion batteries for electric vehicle application

### Karlsruhe Institute of Technology, Germany (2007-2011)

- Development of high-energy density electrode materials for lithium-ion batteries for energy storage applications

### University of Erlangen-Nurnberg, Germany (1999-2006)

- Synthesis of novel metal-centered mixed-valent heterometallic wheels for Single Molecule Magnets applications
- Investigation of sulfur-rich ruthenium nitrosyl complexes as nitric oxide drug delivery agents
- Sulfur-rich Ni/Fe complexes: A structural and functional mimic of [NiFe] hydrogenases
- Studies of sulfur-rich Fe/Ru/Os complexes in relevant to nitrogenases function

### CSMCRI, Bhavnagar (1995-1999)

- Denitrification of nitrates and nitrites enriched water/effluents by cationic-membrane-cell electrolysis
- Electrocatalytic reduction of N-N bonds by ruthenium aminopolycarboxylates in aqueous solution
- Electrochemical study of thin-film metal-coated cation-exchange membranes

## INDUSTRY INTERACTION

**Liotech, Russia:** Lithium-ion batteries for electric vehicle and other energy storage applications

**Mahindra Reva, Bangalore:** Lithium ion battery failure analysis

**Amara raja Batteries, Tirupati:** Fabrication of lithium ion batteries for electric vehicles

**Nissan-Renault, Chennai:** Joint development of LIB materials/cell for HEV/EV applications

**BEL, Pune:** Battery management system development

**TATA, UK:** For future project on Large-lithium-batteries for hybrid vehicles

**Liteaion-Evonik GmbH, Germany:** Development of advanced Lithium-Ion Battery for Automotive Application

**Daimler AG, Germany:** Large scale materials development for lithium-ion batteries

**LiTecBattery GmbH, Germany:** Large-lithium-ion battery project

## EXTERNAL COLLABORATION

**Prof. Dr. Horst Hohn,** Karlsruhe Institute of Technology (KIT), Institute of Nanotechnology, Germany (Nanomaterials synthesis for energy storage materials)

**Prof. Dr. Maximilian Fichtner,** Helmholtz-Institut Ulm, Germany (Synthesis of high energy density conversion cathode materials)

**Prof. Dr. Alain Tressaud,** ICMCB-CNRS, University Bordeaux, France (Thermo-gravimetric studies of fluorinated compounds)

**Prof. R.W.E. Winpenny,** University of Manchester, Manchester, UK (Solvothermal synthesis of magnetic materials)

**Dr. W. Wernsdorfer,** Louis Neel Laboratory, Grenoble, France (Magnetic measurements)

**Prof. P. Mueller,** University of Erlangen-Nuernberg, Erlangen, Germany (Magnetic measurements)

**Prof. A. X. Trautwein,** University of Luebeck, Luebeck, Germany (Moessbauer spectroscopy)

**Prof. A. Grohmann**, Technical University, Berlin, Germany (Nitrogen-rich ligands syntheses)  
**Prof. Dr. R. Szilagy**i, Montana State University, Montana, USA (synchrotron study; future project proposal)  
**Prof. Dr. Goerling**, University of Erlangen-Nuernberg, Erlangen, Germany (DFT calculations)  
**Dr. Andreas Goetz**, VrijeUniversity, Amsterdam, Netherlands (DFT calculation and Molecular Modeling)

## INVITED TALK / LECTURE

1. Development of large lithium-ion batteries for electrical vehicle applications, *Indo-UK joint seminar on functional energy materials, manufacturing and structures (FAEMMA-2013)*, University of Hyderabad, Hyderabad, Mar 26, **2013**.
2. Metallocene based [M/LiF/C] nanocomposite as stable electrode in lithium ion batteries, *Advanced Research Center International (ARCI) for Powder Metallurgy & New Materials (ARCI)*, Hyderabad, India, Feb 18, **2011**.
3. Ferrocene based carbon-Iron/lithium fluoride nanocomposite as stable electrode material in lithium batteries, *Materials Challenges in Alternative & renewable Energy 2010*, Cocoa Beach, Florida, USA, Feb 21-25, **2010**.
4. Synthesis and reactivity studies of sulfur- and oxygen-rich transition metal compounds, *Institute of Nanotechnology, Forschungszentrum Karlsruhe*, Karlsruhe, Germany, Sep 23, **2007**.
5. High Performance Liquid Chromatography, *School of Biomedical and Natural Sciences, Nottingham Trent University, Nottingham*, UK, May 25, **2007**.
6. Radioactivity– A Context Based Learning, *Centre of Effective Learning in Science (CELS), Nottingham Trent University, Nottingham*, UK, Mar 15, **2007**.
7. Chemistry of Group 14 elements, Department of Chemistry, *National University of Ireland, Galway, Ireland* Oct 23, **2006**.
8. Synthetic model compounds to nitrogenase and hydrogenase enzymes, *Central Salt and Marine Chemicals Research Institute, Bhavnagar*, India, Jan 16, **2002**.

## PUBLICATION

### Patent

1. Cathode material for fluoride-based conversion electrodes, method for the production thereof and use thereof. M. Fichtner, H. Hahn, **R. Prakash**, *US Pat. Appl.* **2013**, **US8568618B2**.
2. Carbon encapsulated transition metal oxide nanocomposite, a method for its preparation and its use in Li-ion batteries, M. Fichtner, H. Hahn, **R. Prakash**, *Eur. Pat. Appl.* **2013**, **EP 2578539 A1 20130410**.
3. Carbon encapsulated transition metal oxide nanocomposite, a method for its preparation and its use in Li-ion batteries, M. Fichtner, H. Hahn, **R. Prakash**, *PCT Int. Appl.* **2013**, **WO 2013050115A1 20130411**.
4. Cathode material for fluoride-based conversion electrodes, method for the production thereof and use thereof. M. Fichtner, H. Hahn, **R. Prakash**, *PCT Int. Appl.* **2010**, **WO 2010115601A120101014**.
5. Kathodenmaterial für fluoridbasierte Konversionselektroden, Verfahren zu seiner Herstellung und seine Verwendung M. Fichtner, **R. Prakash**, H. Hahn, *Ger. Offen.* **2010**, **DE 102009017262 A1 20101014**.
6. An improved process for the preparation of ammonia. **R. Prakash**, V. K. Shahi, P. Ray, G. Ramachandraiah, R. Rangarajan, *Indian Pat. Appl.* **2008**, **IN 2001DE00042 A 20080801**.

### Paper

1. Synthesis and characterization of nanoiron: A catalyst for nanotube formation during pyrolysis of hydrocarbons as electrode material for Li batteries, **R. Prakash**, B. Breitung, K. Kuebel, A. K. Mishra, A. Powell, M. Fichtner, to be submitted.

2. Influence of pyrolysis conditions on the cyclic stability of ferrocene based conversion electrode materials. **R. Prakash**, C. Kuebel, M. Fichtner, submitted.
3. Synthesis of new mixed valentdecanuclear calcium and iron cones. **R. Prakash**, R. W. Saalfrank, A. Scheurer, F. W. Heinemann, A. X. Trautwein, L. H. Boettger, submitted.
4. Facile synthesis of carbon encapsulated Fe<sub>3</sub>O<sub>4</sub>nanocomposite and its performance as anode material in lithium-ion batteries. **R. Prakash**, K. Fanselau, S. Ren, T. K. Mandal, K. Kuebel, H. Hahn, M. Fichtner, Beilstein *J. Nanotech*, **2013**, *4*, 699.
5. Nano batteries: Future of automotive transportation. T. N. Rao, **R. Prakash**, *Nano Digest*, **2013**, *4*, issue 8, 28-31.
6. Fe<sub>3</sub>O<sub>4</sub>anchored onto helical carbon nanofibers as high-performance anode in lithium-ion batteries, S. Ren, **R. Prakash**, D. Wang, V. S. K. Chakravadhanula, M. Fichtner, *ChemSuSChem*, **2012**, *5*, 1394-1400.
7. Synthesis of [Co/LiF/C] nanocomposite and its application as cathode in lithium-ion batteries, C. Wall, **R. Prakash**, K. Kuebel, H. Hahn, M. Fichtner, *J. Alloys Comp.*, **2012**, *530*, 121-126.
8. New battery material for electric vehicles, **R. Prakash**, M. Fichtner, *KIT News Lett.* **2011**, *42*, 1-2.
9. Modified synthesis of [Fe/LiF/C] nanocomposite and its application as cathode material in lithium batteries, **R. Prakash**, A. K. Mishra, C. Wall, C. Kuebel, H. Hahn, M. Fichtner, *J. Power Sources*, **2011**, *196*, 5936–5944.
10. C-encapsulated-Fe/LiFnanocomposite as high stability cathode material in Li batteries. **R. Prakash**, C. Kuebel, M. Fichtner, In *Materials Challenges in Alternative & Renewable Energy*; G. Wicks et al. Eds.: *J. Am. Ceram. Soc. Trans.* **2011**, *224*, John Wiley & Sons Inc., New Jersey, **2011**, 173–181.
11. Ferrocene based carbon-iron lithium fluoride nanocomposite as stable electrode material in lithium batteries, **R. Prakash**, A. K. Mishra, A. Roth, C. Kuebel, T. Scherer, M. Gafari, H. Hahn, M. Fichtner, *J. Mater. Chem.* **2010**, *20*, 1871–1876 (status: **Back Cover Article**).
12. Alternative synthesis, density functional calculations and proton reactivity study of a trinuclear [NiFe] hydrogenase model compound. F. Lauderbach, **R. Prakash**, A. W. Götz, M. Munoz, F. W. Heinemann, U. Nickel, B. A. Hess, D. Sellmann, *Eur. J. Inorg. Chem.* **2007**, 3385–3393.
13. Synthesis and magnetic properties of mixed valentheptanuclear manganese wheels: A high-spin S = 27/2 ground state. R. W. Saalfrank, A. Scheurer, **R. Prakash**, T. Nakajima, F. Hampel, F. W. Heinemann, R. Leppin, B. Pilawa, H. Rupp, P. Müller, *Inorg. Chem.* **2007**, *46*, 1586–1592.
14. Synthesis and redox properties of mixed-valentoctanuclear iron defective hexacubanes and a (CaCl) capped body-centered six-sided iron(III) polyhedron. **R. Prakash**, R. W. Saalfrank, H. Maid, A. Scheurer, F. W. Heinemann, A. X. Trautwein, L. H. Boettger, *Angew. Chem. Int. Ed.* **2006**, *45*, 5885–5889; *Angew. Chem.* **2006**, *118*, 6017–6022.
15. Hydrazine nitrosation of metal bound nitric oxide: Structural evidence for the formation of an ammine complex. **R. Prakash**, A. W. Götz, F. W. Heinemann, A. Görling, D. Sellmann, *Inorg. Chem.* **2006**, *45*, 4661–4667.
16. A non-hemedinuclearFe<sup>II</sup> complex containing a single unsupported hydroxo bridge, J. P. López, H. Kaempf, M. Grunert, P. Guetlich, F. W. Heinemann, **R. Prakash**, A. Grohmann, *Chem. Commun.* **2006**, 1718–1720.
17. Synthesis and characterization of metal-centered six-membered mixed-valentheterometallic wheels of iron, manganese and indium. R. W. Saalfrank, **R. Prakash**, H. Maid, F. Hampel, F. W. Heinemann, A. X. Trautwein, L. Böttger, *Chem. Eur. J.* **2006**, *12*, 2428–2433 (status: **Highlighted Article**).
18. Visible light induced reversible extrusion of nitric oxide from a Ru<sup>II</sup>nitrosyl complex: A facile delivery of nitric oxide. **R. Prakash**, A. Czaja, F. W. Heinemann, D. Sellmann, *J. Am. Chem. Soc.* **2005**, *127*, 13758–13759.
19. Protonation and H/D exchange reactions promoted by a sulfur-rich Os<sup>II</sup> hydride complex: Identification of a labile dihydrogen complex. D. Sellmann, **R. Prakash**, F. W. Heinemann, *Dalton Trans.* **2004**, 3991–3996.
20. Reactivity of thiolate-bridged dinuclearRu<sup>II</sup> complex with nitrogenous molecules: Spectroscopic identification of a labile N<sub>2</sub> complex. D. Sellmann, **R. Prakash**, F. W. Heinemann, *Eur. J. Inorg. Chem.* **2004**, 4291–4299.
21. Heterolytic cleavage of molecular hydrogen at a sulfur-bridged dinuclear ruthenium center. D. Sellmann, **R. Prakash**, F. W. Heinemann, M. Moll, M. Klimowicz, *Angew. Chem. Int. Ed.* **2004**, *43*, 1877–1880; *Angew. Chem.* **2004**, *116*, 1913–1916 (status: **Very Important Paper**).
22. Activation of H<sub>2</sub> and CO by sulfur-rich nickel model complexes for [NiFe] hydrogenases and CO dehydrogenases. D. Sellmann, **R. Prakash**, F. W. Heinemann, *Eur. J. Inorg. Chem.* **2004**, 1847–1858.

23. Iron carbonyl, nitrosyl and nitro complexes of a tetrapodalpentadentate amine ligand: Synthesis electronic structure and nitrite-reductase like reactivity. J. P. López, F. W. Heinemann, **R. Prakash**, B. A. Hess, O. Horner, Jean-Louis Oddou, Jean-Marc Latour, A. Grohmann, *Chem. Eur. J.* **2002**, *8*, 5709–5722.
24. Highly-soluble sulfur-rich nickel [Ni(L)(<sup>si</sup>S<sub>3</sub>)<sub>3</sub>] complexes (<sup>si</sup>S<sub>3</sub> = bis(2-mercapto-3-trimethylsilylphenyl)sulfide). D. Sellmann, **R. Prakash**, F. Geipel, F. W. Heinemann. *Eur. J. Inorg. Chem.* **2002**, 2138–2146.
25. Ruthenium (III)aminopolycarboxylato complexes active for the reduction of hydrazine and phenylhydrazine in aqueous medium. **R. Prakash**, G. Ramachandraiah, *J. Chem. Soc., Dalton Trans.* **2000**, 85–92.
26. Investigation and characterization of hydrazine and phenylhydrazine complexes of Ru<sup>III</sup> PDTA (1,2-diaminopropanetetraacetate): Facile reduction of hydrazines in relevance to nitrogenases. **R. Prakash**, G. Ramachandraiah, *J. Mol. Catal. A: chemical* **2000**, *151*, 193–204.
27. Solution-membrane equilibrium at metal deposited cation exchange membrane: Chronopotentiometric characterization of metal modified membrane. V. K. Shahi, **R. Prakash**, G. Ramachandraiah, R. Rangarajan, *J. Colloid. Interf. Sci.* **1998**, *216*, 179–184.
28. Electrocatalytic activation and reduction of N-N bonds in aqueous solution. **R. Prakash**, G. Ramachandraiah, In *Recent Advances in Basic and Applied Aspects of Industrial Catalysis*; T. S. R. Rao, M. G. Dhar. Eds.; *Studies Surf. Sci. Catal.*: Elsevier, **1998**, *113*, 519–527.
29. Interaction of N<sub>2</sub>H<sub>4</sub>Ph<sup>+</sup> with Ru<sup>III</sup> EDTA complexes: Reduction of N<sub>2</sub>H<sub>4</sub>Ph<sup>+</sup> to NH<sub>3</sub> and aniline in aqueous solution. **R. Prakash**, B. Tyagi, D. Chatterjee, G. Ramachandraiah, *Polyhedron* **1997**, *17*, 1235–1240.
30. Electrometric studies on the reduction of Ru<sup>III</sup> EDTA and its hydrazinium complexes. **R. Prakash**, B. Tyagi, G. Ramachandraiah, *Indian J. Chem.* **1997**, *36A*, 201–205.
31. Voltammetry of [LRu<sup>III</sup>(OH<sub>2</sub>)<sub>2</sub>]<sup>-</sup> and [LRu<sup>III</sup>(N<sub>2</sub>H<sub>5</sub>)] complexes at mercury electrode in aqueous solution. G. Ramachandraiah, B. Tyagi, **R. Prakash**, *Bull. Electrochem.* **1997**, *13*, 294–298.
32. Chronopotentiometric studies of bipolar membrane in sodium chloride solution. P. M. Gour, **R. Prakash**, R. Rangarajan, G. Ramachandraiah, V. K. Indusekhar, S. K. Adhikary, G. S. Trivedi, B. J. Shah, B. S. Makwana, *Indian J. Chem.* **1996**, *35A*, 796–799.

## Book chapter

1. Carbon encapsulated-iron lithium fluoride nanocomposite as high cyclic stability cathode material in lithium batteries. **R. Prakash**, C. Kuebel, M. Fichtner, In *Materials Challenges in Alternative & Renewable Energy*; G. Wicks et al. Eds.: *J. American Ceramic Society Transaction volume 224*, John Wiley & Sons Inc., New Jersey, **2011**, pp. 173–181.
2. Electrocatalytic activation and reduction of nitrogen-nitrogen bonds in aqueous solution. **R. Prakash**, G. Ramachandraiah, In *Recent Advances in Basic and Applied Aspects of Industrial Catalysis*; T. S. R. Rao, M. G. Dhar. Eds.; *Studies Surface Science and Catalysis volume 113*, Elsevier, Amsterdam, **1998**, pp. 519–527.

## Conference / Seminar

1. Fabrication and electrochemical performance of lithium ion batteries for EV/HEV applications, **R. Prakash**, K. Kumari, R. Vallabha Rao, Sumit R. Sahu, S. Vasu, V. V. N. Phanikumar, S. Bhuvaneshwari, K. Tanuja and R. Gopalan, 10th Annual Knowledge Foundation conference on Lithium Battery Power and Battery Safety, Capital Hilton, Washington, DC, November 11-12, 2014 (P).
2. National Mission for Electric Mobility: Brainstorming session on rechargeable energy storage systems for xEVs, **R. Prakash**, R. Gopalan, CECRI, Karaikudi, August 22-23, **2013** (A).
3. Structure electrochemical property correlation of carbon free Mn doped LiFePO<sub>4</sub> prepared by hydrothermal method M. B. Sahana, **R. Prakash**, T. Mohan, T. Rajappa, R. Gopalan, and G. Sundararajan, 2<sup>nd</sup> International Conference on Materials for Energy, EnMat II, Karlsruhe, Germany, May 12-17, **2013** (T).
4. Status of ARCI on setting-up of large lithium-ion battery plant, **R. Prakash**, Dr. Mohan, R. Gopalan, Brainstorming meeting on energy storage devices (Batteries), VigyanBhavanAnnexe, New Delhi, April 9, **2013** (T).

5. Development of large lithium-ion batteries for electrical vehicle applications. **R. Prakash**, T. Mohan, M. B. Sahana, R. Gopalan, Indo-UK joint seminar on functional energy materials, manufacturing and structures (FAEMMA-2013), University of Hyderabad, Hyderabad, March 25-26, **2013** (T).
6. Co/LiF/C composite as cathode materials for lithium ion batteries, C. Wall, **R. Prakash**, H. Hahn, M. Fichtner, *Lithium Batteries Discussion 2011*, Arcachon, France, June 12-17, **2011** (P).
7. Carbon encapsulated-Fe LiFnanocomposite as stable electrode material, **R. Prakash**, M. Fichtner, *First International Conference on Materials for Energy*, Convention Center Karlsruhe, Germany, July 4-8, **2010** (T).
8. Novel synthesis method for CoFx based cathode material, C. Wall, **R. Prakash**, H. Hahn, M. Fichtner, *First International Conference on Materials for Energy*, Convention Center Karlsruhe, Germany, July 4-8, **2010** (P).
9. New synthesis method for conversion materials with high cyclic stability, M. Fichtner, W. Lohstroh, C. Wall, **R. Prakash**, *CIMTEC 2010, Symposium FD-Electrochemical energy storage systems: the next evolution*, Montecatini Terme, Italy, June 13-18, **2010** (T).
10. Ferrocene based carbon-Iron/lithium fluoride nanocomposite as stable electrode material in lithium Batteries, R. Prakash, M. Fichtner, Thematischer Workshop des Kompetenzfeldes *Applied and New Materials*, Karlsruhe Institute of Technology, Campus South, June 10, **2010** (T).
11. M/LiF/Nanocarbon composites as conversion electrode materials in lithium batteries, **R. Prakash** B. Breitung, C. Walls, E. Rödern, C. Kübel, H. Hahn, M. Fichtner, *International Workshop on Fluorinated Materials & Energy Conversion*, Bordeaux, France, April 12 -13, **2010** (T).
12. Metallocene-based nanocomposites as cathode materials in lithium batteries, **R. Prakash**, C. Wall, M. Fichtner, *Deutsche Physikalische Gesellschaft Conference Regensburg 2010*, Regensburg, Germany, March 23-25, **2010**(T).
13. Development conversion metal fluoride cathode material for lithium ion battery, M. Fichtner, **R. Prakash**, C. Wall, *Kick-off meeting of LIBNANO project*, Institute of Materials Research-III, Karlsruhe Institute of Technology, Karlsruhe, Germany, October 26, **2009** (T).
14. A novel iron-confined-carbon-LiFnanocomposite as stable positive electrode material in lithium batteries, R. Prakash, M. Fichtner, *Electrochemistry: Learning from the past and to master the future 25<sup>th</sup> One-day International Symposium*, Paul Scherrer Institute, Villigen, Switzerland, May 6, **2009** (P).
15. Lithium ion battery developments at FZK-Program NANOMICRO, **R. Prakash**, *Automotive-TATA meets KIT*, Center of Automotive Research and Technology, University of Karlsruhe, Karlsruhe, Germany, July 4, **2008** (T)
16. Batteries, Super-capacitors and Fuel Cells: Performance-safety-quality, 11<sup>th</sup> Ulm Electrochemical Talks, Fuel Cell Education and Training Center Ulm, Ulm, Germany, June 10, **2008** (T).
17. Cathode materials for lithium ion batteries, J. R. Binder, H. Geßwein, **R. Prakash**, M. Fichtner, *Helmholtz- Review Program NANOMICRO: Science, Technology and System*, Institute of Nanotechnology, Forschungszentrum Karlsruhe, Germany, February 3-5, **2008** (T).
18. *Battery development for hybrid vehicles: Needs, Trends and Prospects*, DECHEMA Colloquium, DECHEMA-Haus, Frankfurt, Germany, January 24, **2008** (T).
19. Fluoride based materials in high energy density lithium batteries, R. Prakash, *Industry-Institute partnership for BMBF project Large-Lithium-Ion Battery (LLIB)*, LiTec Battery GmbH, Kamenz, Germany, December 18, **2007** (T).
20. The first heterometallic mixed-valent diethanolamine wheels. **R. Prakash**, H. Maid, F. Hampel, F. W. Heinemann, R. W. Saalfrank, *International conference on Redox Active Metal Centers in Homogenous and Heterogenous Electron Transfer System*, University of Erlangen-Nürnberg, Erlangen, Germany, October 4-7, **2006** (P).
21. Synthesis and redox properties of mixed-valent octanuclear iron defective hexacubanes and a capped nanonuclear iron(III) space-centered orthorhombic disphenoid. **R. Prakash**, R. W. Saalfrank, H. Maid, A. Scheurer, F. W. Heinemann, A. X. Trautwein, L. H. Boettger, *First European Chemistry Congress*, Loránd Eötvös University, Budapest, Hungary, August 27-31, **2006** (P).
22. Redox and magnetic properties of di- and triethanolamine-based supramolecular systems. R. W. Saalfrank, A. Scheurer, **R. Prakash**, S. Spanner, T. Nakajima, H. Maid, F. Hampel, F. W. Heinemann, *Rennes-Erlangen Symposium*, Institute of Chemistry, University of Rennes, Rennes, France, June 20-23, **2006** (T).

23. Searching for single molecule magnets. R. W. Saalfrank, **R. Prakash**, A. Scheurer, L. H. Boettger, V. Schünemann, A. X. Trautwein, *Sixth International Workshop on Mössbauer Spectroscopy*, The Lufthansa Training Center, Seeheim, Germany, June 7-11, **2006** (P).
24. Synthesis and magnetic properties of mixed-valent Mn wheels, R. W. Saalfrank, A. Scheurer, **R. Prakash**, T. Nikimya, F. Hampel, F. W. Heinemann, P. Mueller, *International Minisymposium on Redox Active Metal Centers in Homogenous and Heterogenous Electron Transfer System*, University of Erlangen-Nürnberg, Erlangen, Germany, February 24-26, **2005** (P).
25. Heterolytic H<sub>2</sub> activation at sulfur-rich metal centers: A step closer to the functional mimic of hydrogenases. **R. Prakash**, F. W. Heinemann, D. Sellmann, *Chemistry Symposium Erlangen-Rennes*, University of Erlangen-Nürnberg, Erlangen, Germany, June 15-19, **2004** (P).
26. Heterolytic H<sub>2</sub> activation by [Ni(S<sup>t</sup>Bu)(<sup>6</sup>S<sub>3</sub>)]. D. Sellmann, **R. Prakash**, F. W. Heinemann, *International SFB-Symposium on Redox-Active Metal complexes-Control of reactivity via Molecular Architecture*, University of Erlangen-Nürnberg, Erlangen, Germany, March 26-29, **2003** (T).
27. Sulfur-rich nickel compounds modeling the reactivity of [NiFe] hydrogenase centers. D. Sellmann, **R. Prakash**, F. W. Heinemann, *Chemistry Symposium Rennes-Erlangen 2001*, Institute of Chemistry, University of Rennes, Rennes, France, April 17-20, **2001** (T).
28. Electrochemical reduction of N<sub>2</sub>H<sub>4</sub> in aqueous solution using ruthenium catalyst. **R. Prakash**, G. Ramachandraiah, *National Symposium in Catalysis*, Indian Institute of Science, Bangalore, India, January 27-30, **1999** (T).
29. New electron donors for the catalytic reduction of bound hydrazine. **R. Prakash**, G. Ramachandraiah, *14<sup>th</sup> National Symposium on Catalysis*, Anna University, Chennai, India, December 16-18, **1998** (T).
30. Activation and reduction of N-N bonds by coordinately unsaturated metal complexes. **R. Prakash**, G. Ramachandraiah, *First AGRS Meet*, MS University, Baroda, India, December 6, **1998** (T).
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32. Electrochemical activation and reduction of N-N bonds in aqueous solution. **R. Prakash**, G. Ramachandraiah, *13<sup>th</sup> National Symposium on Catalysis*, IIP, Dehra Dun, India, April 2-4, **1997** (T).
33. Efficient electrocatalytic reduction of N<sub>2</sub>H<sub>3</sub>Ph to NH<sub>3</sub> and NH<sub>2</sub>Ph in aqueous solution **R. Prakash**, G. Ramachandraiah, *66<sup>th</sup> National Academy of Sciences India*, Dr BAM University, Aurangabad, India, October 31-November 2, **1996** (T).
34. Monomeric hydrazinium complexes of Ru<sup>III</sup> PDTA as electrocatalyst for the efficient reduction of hydrazine in aqueous solution. **R. Prakash**, G. Ramachandraiah, *National Workshop on Catalysis*, CSMCRI, Bhavnagar, India, December 20-22, **1995** (T).
35. Electrometric study on the reduction of N-N bond of metal bound hydrazine in aqueous solution. **R. Prakash**, B. Tyagi, R. Rangarajan, G. Ramachandraiah, *55<sup>th</sup> Annual Session of National Academy of Sciences India*, S. V. University, Tirupati, India, November 3-5, **1995** (T).
36. Studies on  $\alpha$  and  $\beta$ -alanine complexes of metal with hydrazine. **R. Prakash**, S. Govindarajan, *National Symposium on Current trends in Coordination Chemistry*, Cochin University, Cochin, India, March 23-25, **1995** (P).

(A: Attended; P: Poster; T: Talk)

## PhD Thesis supervision

1. Synthesis of graphene/2-D nanostructure materials for lithium-ion batteries and supercapacitor application, *Sumit Ranjan Sahu*, Centre for Automotive Energy Materials, ARCI Chennai (Jul 2014-present; Ext. guide: Prof. Prathap Haridoss, IITM Chennai).
2. Development of high energy and high power cathode materials for lithium-ion batteries: Electric vehicles application, S. Bhuvaneshwari, Centre for Automotive Energy Materials, ARCI Chennai (Jul 2014-present; Ext. guide: Prof. U. V. Varatharaju, IITM Chennai).
3. Novel synthesis and electrochemical characterization of in-situ carbon coated lithium-based electrode materials, *V. V. N. Phanikumar*, Centre for Automotive Energy Materials, ARCI Chennai (Dec 2013-present; Ext. guide: Prof. B. V. Appa Rao, NIT Warangal).

4. Investigation of metallocene based materials as conversion cathodes in lithium ion batteries, *Ben Breitung*, Institute of Nanotechnology, Karlsruhe Institute of Technology, Karlsruhe, Germany (Sept 2010- Dec 2011; Group: Dr. M. Fichtner/ Prof. A. Powell).
5. Transition metal fluorides as cathode materials for lithium ion batteries, *Clemens Wall*, Institute of Nanotechnology, Karlsruhe Institute of Technology, Karlsruhe, Germany (Apr2009- Dec 2011; Group: Dr. M. Fichtner/ Prof. H. Hahn).
6. Synthesis, Structures and Reactivity of Novel Nitrogenase Relevant Transition Metal Complexes with NS<sub>4</sub>- and N<sub>3</sub>S<sub>3</sub>-Donor Atoms *Shaban Y. Shaban*, Institute of Inorganic Chemistry, University of Erlangen-Nuernberg, Germany(Sep 2000–May 2005; Group: Late Prof. D. Sellmann).
7. Structural and Functional Model Compounds for [NiFe] Hydrogenases,*Frank Lauderbach*, Institute of Inorganic Chemistry, University of Erlangen-Nuernberg. Germany(Jan 2002–Dec2004; Group: Late Prof. D. Sellmann).
8. Synthesis and Reactivity of Ruthenium Complexes with Sulfur Dominated Coordination Spheres *Alexander U. Czaja*, Institute of Inorganic Chemistry, University of Erlangen-Nuernberg. Germany(May 2002–Jul 2005; Group: Late Prof. D. Sellmann).
9. Syntheses, Structures, and Properties of Metal-Organic Networks. *Menase Ayuck Ako*, Institute of Organic Chemistry, University of Erlangen-Nuernberg. Germany(Jul 2004–Dec 2004; Group: Prof. R. W. Saalfrank).