

Name

Dr. M. B. Sahana

**Designation**

Sr. Scientist

Qualification

Ph.D.

Experience**1998 - 2004**

PhD

Indian Institute of Science

2005 - 2005

Post-Doctoral Fellow

Stockholm University, Stockholm

2006 - 2010

Post-Doctoral Fellow

Wayne State University, Detroit, USA

Research areas of interest

Electrode materials for lithium ion batteries, Microstructure Property Correlation

List of publications

1. In-situ carbon encapsulation of $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ using pillared ethylene glycol trapped in the metal hydroxide interlayers for enhanced cyclic stability S Vasu, **M. B Sahana**, C Sudakar, R Gopalan, G Sundararajan *Electrochimica Acta* 251, 363-377
2. Microstrain engineered magnetic properties in $\text{Bi}_{1-x}\text{Ca}_x\text{Fe}_{1-y}\text{Ti}_y\text{O}_{3-\delta}$ nanoparticles: deviation from Néel's 1/d size-dependent magnetization behaviour, Pavana S. V

Mocherla, **M. B Sahana**, R. Gopalan, M.S Ramachandra Rao, B. R. K Nanda, C. Sudakar, *Materials Research Express* 4 (10), 106106, 2017

3. Raman spectral signature of Mn-rich nanoscale phase segregations in carbon free $\text{LiFe}_{1-x}\text{Mn}_x\text{PO}_4$ prepared by hydrothermal technique,
M. B. Sahana, S. Vasu, N. Sasikala, S. Anandan, H. Sepehri-Amin, C. Sudakar and R. Gopalana, *RSC Adv.*, 4, 2014, 64429
4. Quantum confinement effects and band gap engineering of SnO_2 nanocrystals in a MgO matrix
M.B. Sahana, C. Sudakar, A. Dixit, J.S. Thakur, R. Naik, V.M. Naik,
Acta Materialia, 60(3) 2012, 1072-1078.
5. Nanostructured high specific capacity C-LiFePO₄ cathode material for lithium-ion batteries
K. Bazzi, K.S Dhindsa, A. Dixit, **M.B. Sahana**, C. Sudakar, M. Nazri, ZX.Zhou, P. Vaishnava, V.M Naik, G.A. Nazri, R. Naik,
J. Mater. Res. (2012), 424-430.
6. Regulation of Polar Peptidoglycan Biosynthesis by Wag31 Phosphorylation in Mycobacteria
C. Jani, H. Eoh, JJ Lee, K Hamasha, **M.B. Sahana**, J.S. Han, S. Nyayapathy, J.Y. Lee, J.W Suh, S.H. Lee, S.J Rehse, D.C. Crick, C.M. Kang,
BMC Microbiology 10 Art No. 327, (2010).
7. The effect of Wag31 phosphorylation on the cells and the cell envelope fraction of wild-type and conditional mutants of Mycobacterium smegmatis studied by visible-wavelength Raman spectroscopy,
K. Hamasha, **M.B. Sahana**, C. Jani, S. Nyayapathy, C.M Kang, and S. J. Rehse.
Biochemical and Biophysical Research communications, (2010)
391, 664-668.
8. Coexistence of anion and cation vacancy defects in vacuum-annealed In_2O_3 thin films,
C. Sudakar, A. Dixit, Sanjiv Kumar, **M.B. Sahana**, G. Lawes, R. Naik and V.M. Naik,
Scripta Materialia 62(2), 63 (2010).
9. The effect of titanium on the lithium intercalation capacity of V_2O_5 thin films'

- M.B. Sahana**, C. Sudakar, C. Thapa, V.M. Naik, G.W. Auner, R. Naik and K.R. Padmanabhan '*Thin Solid Films*, (2009), 24, 6642-6651.
- 10.** Structural, magnetic, and electrical studies on polycrystalline transition metal doped BiFeO₃ thin films",
P. Kharel, S. Talebi, B. Ramachandran, A. Dixit, V.M. Naik, **M.B. Sahana**, C. Sudakar, R. Naik, M.S.R. Rao, G. Lawes,
J. Phys. Cond. Matter. (2009) 21 036001.
- 11.** Band Gap Engineering by Tuning Particle Size and Crystallinity of SnO₂-Fe₂O₃ Nanocrystalline Composite Thin Films,
M.B. Sahana, C. Sudakar, G. Setzler, A. Dixit, J.S. Thakur, G. Lawes, R. Naik, V.M. Naik, and P.P. Vaishnava, *Applied Physics Letters*, (2008), 93(23), 231909/1-231909/3.
- 12.** Guiding Of Highly-Charged Ions Through Insulating Nano-Capillaries,
R. Schuch, **M.B. Sahana**, I. L. Soroka, Gy.Vikor, R. T. Kumar, Z. Hongqiang, A. Johansson and P. Skog,
Canadian journal of physics, (2008), 86, 327-330.
- 13.** Influence of the stoichiometry of V₂O₅ thin films on electrochemical properties,
M.B. Sahana, C. Sudakar, G. Lawes, V.M. Naik, Ron Baird, G.W. Auner, K. R. Padmanabhan, and R.Naik,
Materials Science and Engineering B, (2007), 143 42-50.
- 14.** Ion implantation and ion beam analysis of MOD deposited oxide films,
X. Marko, P. Talagala, **M.B. Sahana**, R. Naik, K.R. Padmanabhan, C. P. Marques, E. Alves, *Nuclear Instruments & Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms*, (2007), 261, 456-460.
- 15.** Guiding of highly charged ions by highly ordered SiO₂ nanocapillarie
M.B. Sahana, P. Skog, Gy. Viktor, R. T. Rajendra Kumar, R. Schuch,
Physical Review A: Atomic, Molecular, and Optical Physics, (2006), 73, 040901/1-040901/4.
- 16.** Metalorganic chemical vapor deposition of highly oriented thin film composites of V₂O₅ and V₆O₁₃: Suppression of the metal-semiconductor transition in V₆O₁₃
M.B. Sahana, S. A. Shivashankar,
Journal of Materials Research, (2004), 19, 2859-2870.

17. Growth of nanowires of β - $\text{Na}_x\text{V}_2\text{O}_5$ by metalorganic chemical vapor deposition
M.B. Sahana, S. A. Shivashankar,
Journal of Materials Chemistry, (2003), 13, 2254-2260.
18. Phase transformation and semiconductor-metal transition in thin films of VO_2 deposited by low-pressure metalorganic chemical vapor deposition
M.B. Sahana, G. N Subbanna, S.A Shivashankar,
Journal of Applied Physics, 92, (2002),6495-6504.
19. Microstructure and properties of VO_2 thin films deposited by MOCVD from vanadyl acetylacetonate
M.B. Sahana, M.S. Dharmaprakash, S.A. Shivashankar,
Journal of Materials Chemistry, (2002), 12, 333-338.
20. Room temperature ferromagnetism in Cr-doped In_2O_3 on high vacuum annealing of thin films and bulk sample
P. Kharel, C. Sudakar, **M.B. Sahana**, G. Lawes, R. Suryanarayanan, R.Naik, V. M. Naik, *Journal of Applied Physics* (2007), 101, 09H117.
21. ‘Time evolution of the microstructure of $\text{VO}_2(\text{B})$ films deposited on glass by MOCVD’.
M. B. Sahana, G. N. Subbanna, and S. A. Shivashankar,
Mater. Research society symposium proceedings, vol. 749, 2003, W.5.14,
22. ‘Transmission of slow Ne^{7+} ions through nanocapillaries’
M. B. Sahana, P. Skog, Gy. Viktor, R.T. Rajendra kumar, and R. Schuch,
Book of Inv. Papers, *Intern. Conf. on Photonic, Electronic, and Atomic Collisions*,

Annexure 2: Invited Seminar/Colloquia

- June 17-19, 2016** Indo-US Workshop on Analysis of Multiphysics Phenomena in Li-ion Cells. Indian Institute of Technology (IIT), Bombay India “Layered lithium - mixed transition metal oxide cathodes for lithium ion batteries”
- Feb 19-22, 2015** **7th IndoGFOE Symposium –, Agra, India** Batteries for Electric Vehicles: Present and Future

- March 2015 -** *VIT University, Vellore National conference on energy materials Lithium ion batteries*
- December 17 2012** Workshop on Physics Education and Research, Department of Physics, Indian Institute of Technology Madras, Chennai " Physics of energy storage materials"
- Feb 11, 2010** **General Motors Global R&D centre, Mi, USA,** " Nanostrucutred Cathode materials for Lithium ion batteries"
- Nov 11, 2009** **Department of Physics, Wayne State University, MI, USA,** "Structure property correlation of Cathode materials for Lithium ion batteries."
- Feb, 2007** **Physics Department, Wayne State University, MI, USA,** "Guiding of Highly-charged Ions through Insulating Nanocapillaries"
- Dec 4, 2006** **Physics Department, Western Michigan University,** Kalamazoo, MI, USA, "Guiding of Highly-charged Ions through Insulating Nanocapillaries"
- July 2005** **XXIV ICPEAC 2005 Rosario ARGENTINA** "Special report: Transmission of slow Ne⁷⁺ ions through nanocapillaries"

Annexure 3: Presentation at Conference

1. Oral presentation of the paper entitled Structure electrochemcial property correlation of carbon free Mn doped LiFePO₄ prepared by hydrothermal method"
M. B. Sahana, R. Prakash, T. Mohan, T. Rajappa, R. Gopalan, and G. Sundararajan, 2nd International Conference on Materials for Energy, EnMat II, Karlsruhe/Germany from May 12-17, **2013** .
2. Poster presentation of the paper entitled "Electrical and electrochemical characterization of nano-sized LiFePO₄ cathode materials synthesized by a lauric acid-based sol--gel method"
 Khadije Bazzi, Ambesh Dixit, **M. B. Sahana**, C. Sudakar, M. Nazri P. P. Vaishnava, V. Naik, G. A. Nazri, R. Naik American Physical Society Meeting, March 21-25, 2011, Dallas, Texas, USA
3. Oral presentation of the paper entitled "Quantum confinement effects in nanocrystals of SnO₂ in MgO matrix "
M.B. Sahana C. Sudakar A. Dixit J.S. Thakur R. Naik V.M. Naik

American Physical Society Meeting, March 21-25,2011, Dallas, Texas, USA

4. Oral presentation of the paper entitled “Magnetic and spectroscopic characterization of C-LiFePO₄nanoparticles for cathode material for Li ion batteries”

Ambesh Dixit K. Bazzi **M.B. Sahana** C. Sudakar M. Nazri P.P. Vaishnava V. Naik V.K. Garg A.C. Oliveira G.A. Nazri, R. Naik

American Physical Society Meeting, March 21-25,2011, Dallas, Texas, USA.

5. Oral presentation of the paper entitled “Structural and electrochromic properties of M₂(SO₄)₃, with M = (Cr, Fe, V) nanostructures prepared by template assisted electrodeposition method”

M.B. Sahana, Sudakar Chandran Ratna Naik Vaman Naik American Physical Society Meeting, Portland, March 15-19, 2010 Portland, USA

6. Poster presentation of the paper entitled “Structural, optical and electrochemical properties of SnO_{2-x} thin films

Rohan Bandekar, **M.B. Sahana**, Sudakar Chandran Ratna Naik, Vaman M. Naik, American Physical Society Meeting, Portland, March 15-19,2010 Portland, USA

7. Oral presentation of the paper entitled “Electrical and magnetic properties of BiFeO₃-CoFe₂O₄nanotube composite”

C. Sudakar, A. Dixit, **M.B. Sahana**, G. Lawes, R. Naik, V. M. Naik

American Physical Society Meeting, Portland, March 15-19, 2010, Portland, USA

8. Oral presentation of the paper entitled “Structural and electrochemical properties of V₂O₅ and Ag_xV₂O₅ nanowires prepared by template assisted method’

M.B. Sahana, C. Sudakar, R. Naik, V.M. Naik

American Physical Society Meeting, Portland, March 15-19, 2010, Portland, USA

9. Poster presentation of the paper entitled “Effect Of Oxygen Nonstoichiometry Of Electrochemical Properties Of V₂O₅ Thin Films”

M.B. Sahana, C. Sudakar, C. Thapa, G. Lawes, G.W. Auner K.R. Padmanabhan R. Naik, V.M. Naik

American Physical Society Meeting, New Orleans, USA Mar 10-14, 2008

10. Poster presentation of the paper entitled “Influence of stoichiometry of V₂O₅ thin films on the electrochemical properties ”

M.B. Sahana, C. Sudakar, C. Thapa, G. Lawes, R. Baird, G.W. Auner K.R. Padmanabhan R. Naik, V.M. Naik

American Physical Society Meeting, March 5-9, Denver, Colorado, USA

11. Oral presentation of the paper entitled “Synthesis and Characterization and Gas Sensing Properties of SnO₂-xFe₂O₃(x = 0 to 1) Thin Films” G. Setzler

C. Sudakar **M.B. Sahana** P.P. Vaishnava Ron Baird G.W. Auner G. Lawes R. Naik, V.M. Naik

American Physical Society Meeting, March 5-9, Denver, Colorado, USA

12. Oral presentation of the paper entitled “Influence of stoichiometry of V₂O₅ thin films on the electrochemical properties”

M.B. Sahana, G. Lawes, K. R. Padmanabhan, R. Naik, V.M Naik

20th International Conference on Raman Spectroscopy Yokohama, Japan, 20–25 Aug 2006.

13. Oral presentation of the paper entitled “Structural, Optical, and Electrochromic Properties of V₂O₅ Thin Films”

M.B. Sahana, G. Lawes, K. R. Padmanabhan, R. Naik, V.M Naik

American Physical Society Meeting, Baltimore,USA, Mar 13-17 2006

14. Oral presentation of the paper entitled “Structural, Optical, and Electrochromic Properties of V₂O₅ Thin Films “

M.B. Sahana, G. Lawes, K. R. Padmanabhan, R. Naik, V.M Naik

Spring meetings of Ohio Section of the American Physical Society (OSAPS) and the Michigan Section of the American Association of Physics Teachers (MAAPT), Detroit, Michigan, USA, March 31 to April 12006.

15. Oral presentation of the paper entitled “Guiding of highly charged ions by SiO₂ nanocapillaries”

Sep 2005 3rd Conference on Elementary Processes in Atomic Systems (CEPAS2005)

16. Oral presentation on Special report: Transmission of slow Ne⁷⁺ ions through nanocapillaries”

M.B. Sahana, P. Skog, Gy. Viktor, R. T. Rajendra Kumar, R. Schuch,

20-26 July 2005 XXIV ICPEAC 2005 Rosario ARGENTINA

17. “ Poster presentation of paper entitled “Time evolution of the microstructure of VO₂(B) films deposited on glass by MOCVD

M.B. Sahana and S. A. Shivashankar

Dec 2-5 2002 MRS Fall meeting 2002, Boston, USA,. Mater. Research symposium .