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Address: Jaipur ,Rajasthan,India - 302004

Expertise

Condensed Matter Physics

I received Ph.D. in 2007 on Metal-Semiconductor inter-connections from UOR Jaipur India. I worked for 5 yrs as a Research Associate (CSIR India), Postdoctoral Fellow (MNRE, Govt. of India) and TRIL Fellow (ICTP & Synchrotron Trieste Italy). I worked at Nanoparticle by Design Unit, Okinawa Institute of Science & Technology Graduate University, Okinawa Japan until Dec. 13, 2013. At OIST I worked on H₂ storage in Np's/thin film. Finally I joined Univ. of Raj. Jaipur as Asst. Prof. on Dec. 14, 2013.

Work experience

1. University of Rajasthan 2013 — Present

Assistant Professor
Jaipur

2. International Centre for Theoretical Physics 2011 — 2012

Post-Doctoral Fellow
Trieste Italy

3. University of Rajasthan 2010 — 2010

Fellow
Jaipur

4. University of Rajasthan 2008 — 2010

Research Associate
Jaipur

5. Poornima Group Of Colleges, Jaipur 2007 — 2008

Lecturer
Jaipur

Education

1. Ph.D. - 2007

University of Rajasthan

2. M.Sc. - 2004

University of Rajasthan

3. NET - 2004

CSIR

4. B.Sc. - 2001

University of Rajasthan

Honours and Awards

1. BASE Fellow - 2016

Indo-U.S. Science and Technology Forum

2. PDF Fellowship - 2013

OIST Okinawa Japan

3. TRIL Fellow - 2012

I.C.T.P. & Synchrotron Trieste Italy

4. TRIL Fellow - 2011

I.C.T.P. & Synchrotron Trieste Italy

5. PDF Fellowship - 2010

MNRE, Govt. of India, New Delhi

6. Research Associate - 2008

CSIR-ES (Govt. of India)

7. DR. MAHAJANI UNIVERSITY GOLD MEDAL and JAI NARAIN RAM CHANDRA GAUR GOLD MEDAL for securing highest marks in mathematics at B.A. and B.Sc. Examination and both combined level - 2001

University of Rajasthan Jaipur Rajasthan India

Research Project

Perovskites -based low-cost and high-efficiency hybrid halide solar cells

Role: PI

Year 2017, Amount 2241000

Hydrogen Storage in Mg based Nanocomposites

Role: PI

Year 2015, Amount 600000

Chlorophyll incorporation in Perovskite Solar Cell for Minimizing the Voltage Loss

Role: Co-PI

Year 2021, Amount 84540000

Membership In Professional Bodies

1. Indian Society for Particle Accelerators (ISPA), 2021

Life Member

2. Materials Research Society of India, 2021

Life Member

3. Indian Association of Physics Teachers , 2020

Life Member

Membership In Committees

Publication

- 1. Enhancement of the hydrogen storage properties and sorption kinetics of Mg–La₂₈. 9Ni₆₇. 5Si₃. 6 nanocomposites**
K Chawla, G Sharma, A Bajpai, PK Roy, IP Jain, Chhagan Lal,
International Journal of Hydrogen Energy, , Volume 57, Year 2024, Pages 1253-1262
- 2. Study of electrodeposited zinc selenide (ZnSe) nanostructure thin films for solar cell applications**
Nathu Lal, Kanhaiya Chawla, Sandeep Sharma, Raj Laxmi Chouhan, Chhagan Lal
Journal of the Indian Chemical Society, Volume 100, Year 2023, Pages 101006
- 3. Synthesis of Zinc Oxide Nanostructure via Electro-deposition Technique for Gas Sensing Switching Applications**
Nathu Lal, Kanhaiya Chawla, Sandeep Sharma, Deepak Kumar Yadav, Chhagan Lal
Orient J Chem, Volume 39 (1), Year 2023, Pages 136--143
- 4. Structural, optical and electrical characterizations of Mg/Ti/Ni multilayer thin films deposited by DC magnetron sputtering for hydrogen storage**
Jangid M.K.;Sharma S.S.;Ray J.;Yadav D.K.;Lal C.
International Journal of Hydrogen Energy, Volume 48 (96), Year 2023, Pages 37921-37929
- 5. Revealing the relaxation kinetics of curcumin based dye-sensitized solar cell**
Govind Sharma, Chandan Dawo, Uttam K. Kumawat, Saurabh K. Saini, R.K. Singhal, Chhagan Lal ,
Materials Science and Engineering: B, Volume 298, Year 2023, Pages 116905
- 6. Revealing the photophysics of N719 dye based dye-sensitized solar cell**
Govind Sharma, Chandan Dawo, Komal Mulchandani , Uttam K. Kumawat, R.K. Singhal, Chhagan Lal,
Optical Materials, Volume 142, Year 2023, Pages 114113
- 7. Present status of metal-free photosensitizers for dye-sensitized solar cells**
Sharma G.;Singh V.;Dolia S.N.;Jain I.P.;Jain P.K.;Lal C.
Materials Today: Proceedings, Volume , Year 2023, Pages
- 8. Synthesis of MgO nanostructure thin films via electrodeposition method for gas sensing applications**
Nathu Lal, Amit Kumar, Kanhaiya Chawla, Sandeep Sharma, Chhagan Lal,
Bangladesh Journal of Scientific and Industrial Research, Volume 2, Year 2023, Pages 58
- 9. RO Reject Water Characteristics, Environmental Impacts and Management**

- Jyoti Vaishnav, Prama Esther Soloman, Chhagan Lal and Pankaj Kumar Jain,
Jurnal Kejuruteraan (Journal of Engineering), Volume 35 (3), Year 2023, Pages 557-566
10. **Investigation of ultrafast carrier dynamics in curcumin dye for environment friendly dye-sensitized solar cell**
Govind Sharma, Saurabh K Saini, Komal Mulchandani, Amarnath Bheemaraju, Chhagan Lal,
Environmental Science and Pollution Research , Volume 30, Year 2023, Pages 121175-121181
 11. **Effect of MWNT concentration on hydrogen gas sensing property of MWNT-ployaniline composite**
Shrivastava Subodh., Shubhra Mathur., Nutan Sharma., Ankit Kumar Vishwakarma., Chagan Lal Saini.,
and SP Nehra,
International Journal of Hydrogen Energy, Volume 48 (96), Year 2023, Pages 38107-38117
 12. **Degradation of Dyes using Biologically Synthesized Iron Oxide Nanoparticles by Manilkara Zapota Leaves Extract**
Sharma S.;Yadav D.K.;Chawla K.;Lal N.;Alvi P.A.;Lal C.
Rasayan Journal of Chemistry, Volume 15, Year 2022, Pages 2165-2170
 13. **Effect of PdCl₂ catalyst on the hydrogenation properties and sorption kinetics of Mg**
Chawla K.;Kumar Yadav D.;Bajpai A.;kumar S.;Jain I.P.;Lal C.
Sustainable Energy Technologies and Assessments, Volume 51, Year 2022, Pages 101981
 14. **Synthesis and Characterization of Silver Nanoparticles by Murraya Koenigii Leaves**
S Sharma, D K Yadav, K Chawla, N Lal, Chhagan Lal
Jurnal Kejuruteraan, Volume 34(5), Year 2022, Pages 819-824
 15. **Hydrogenation properties and kinetic study of MgH₂ -x wt% AC nanocomposites prepared by ball milling**
Kanhaiya Chawla, Deepak Kumar Yadav, Abhinav Bajpai, Sushant Kumar and Chhagan Lal,
Environmental Science and Pollution Research, Volume 28, Year 2021, Pages 3872-3879
 16. **Prospects of Aloe vera and its bioactive compounds in diabetes: Critical review**
Sharma M.K.;Chauhan J.;Kumar M.;Joshi C.K.;Sharma S.;Lal C.
Journal of Pure and Applied Microbiology, Volume 15, Year 2021, Pages 1781-1797
 17. **Catalytic effect of TiO₂ on hydrogen storage properties of MgH₂**
Yadav D.K.;Chawla K.;Pooja ;Lal N.;Choudhary B.L.;Lal C.
Materials Today: Proceedings, Volume 46, Year 2021, Pages 2326-2329
 18. **Catalytic effect on hydrogen de/absorption properties of MgH₂ - x wt % MM (x = 0, 10, 20, 30) nanomaterials**
Deepak Kumar Yadav, Kanhaiya Chawla, IP Jain, and Chhagan Lal,
Environmental Science and Pollution Research, Volume 28, Year 2021, Pages 3866-3871
 19. **Synthesis of ZnO Nanoparticles by Aloe Barbadensis Leaf Extract via**

Green Method and their Characterization

Sandeep Sharma, DK Yadav, Kanhaiya Chawla, Nathu Lal, Chhagan Lal,
International Journal of Recent Research and Review, Volume XIV(2), Year 2021, Pages 1--6

20. **Synthesis and characterization of copper oxide Nano particles by aloe barbadensis leaves via green method**

S Sharma, D K Yadav, K Chawla, N Lal, Chhagan Lal
Quantum Journal of Engineering, Science and Technology, Volume 2(5), Year 2021, Pages 1-9

21. **Hydrogenation properties of MgH₂-x wt% AC (x= 0, 5, 10, 15) nanocomposites**

Chawla, Kanhaiya and Yadav, Deepak Kumar and Sharda, Pooja and Lal, Nathu and Sharma, Sandeep and Lal, Chhagan
International Journal of Hydrogen Energy, Volume 45, Year 2020, Pages 23971--23976

22. **Advanced Nanomaterials for Energy and Environmental Applications**

Chhagan Lal, and IP Jain,
Nanotechnology and Advanced Material Science, Volume 3, Year 2020, Pages 1-2

23. **Structural, morphological and optical properties of P3HT/MAPbI₂Cl/ZnO: GO thin films for perovskite solar cells**

Pooja Sharda, Kanhaiya Chawla, Deepak Kumar Yadav, Chhagan Lal,
AIP Conference Proceedings, Volume 2265, Year 2020, Pages 30327

24. **Perovskite Based Hybrid Halide Solar Cells for Green Energy Solutions**

Chhagan Lal, I.P. Jain
LAP Lambert Academic Publishing, Volume , Year 2020, Pages

25. **Electronic structure and surface morphology of P3HT/MAPbI₂Cl/GO-ZnO np's thin films for PSCs**

Pooja Sharda, Kanhaiya Chawla, Deepak Kumar Yadav, Vidyadhar Singh, Indra Prabh Jain and Chhagan Lal
Materials Today: Proceedings, Volume 42, Year 2019, Pages 1682-1684

26. **CH₃NH₃PbI₃: A Potential Candidate for Perovskite Based Solar Cells**

Pooja and Chhagan Lal,
Adv. Sci. Eng. Med., Volume 11 (1-2), Year 2019, Pages 95-99

27. **Enhancement of optical and structural properties of vacuum evaporated CdTe thin films**

Chander S.;Purohit A.;Lal C.;Dhaka M.S.
Materials Chemistry and Physics, Volume 185, Year 2017, Pages 202-209

28. **Role of interlayer spacing and functional group on the hydrogen storage properties of graphene oxide and reduced graphene oxide**

Rajaura R.S.;Srivastava S.;Sharma V.;Sharma P.K.;Lal C.;Singh M.;Palsania H.S.;Vijay Y.K.
International Journal of Hydrogen Energy, Volume 41 (22), Year 2016, Pages 9454-9461

29. **Catalytic effect of TiF₄ in improving hydrogen storage properties of MgH₂**
Mukesh Jangir ., Ankur Jain ., Shotaro Yamaguchi ., Takayuki Ichikawa ., Chhagan Lal ., I.P. Jain .,
International Journal of Hydrogen Energy, Volume 41, Year 2016, Pages 14178-14183
30. **Thickness dependent optical and electrical properties of CdSe thin films**
Purohit A.;Chander S.;Nehra S.;Lal C.;Dhaka M.
AIP Conference Proceedings, Volume 1728, Year 2016, Pages 020591
31. **Impact of thermal annealing on optical properties of vacuum evaporated CdTe thin films for solar cells**
Chander S.;Purohit A.;Lal C.;Nehra S.;Dhaka M.
AIP Conference Proceedings, Volume 1728, Year 2016, Pages 020590
32. **Catalytic Effect of TiF₃ on Hydrogenation Properties of MgH₂**
Mukesh Jangir, Reena Verma, Chhagan Lal, and IP Jain,
Int J Recent Res Rev, Volume IX (1), Year 2016, Pages 29--34
33. **Engineering high-performance Pd core-MgO porous shell nanocatalysts via heterogeneous gas-phase synthesis**
Singh V.;Cassidy C.;Abild-Pedersen F.;Kim J.H.;Aranishi K.;Kumar S.;Lal C.;Gspan C.;Grogger W.;Sowwan M.
Nanoscale, Volume 7, Year 2015, Pages 13387-13392
34. **Swift heavy ion beam mixing at V/Si interface**
Verma R.;Kumar S.;Lal C.;Jain I.P.
Current Applied Physics, Volume 15, Year 2015, Pages 129-134
35. **Effect of thickness on structural, optical, electrical and morphological properties of nanocrystalline CdSe thin films for optoelectronic applications**
Purohit A.;Chander S.;Nehra S.;Lal C.;Dhaka M.
Optical Materials, Volume 47, Year 2015, Pages 345-353
36. **Effect of thickness on structural and optical properties of CdSe thin films**
Purohit A.;Chander S.;Nehra A.;Nehra S.;Lal C.;Dhaka M.
AIP Conference Proceedings, Volume 1665, Year 2015, Pages 080017
37. **Effect of annealing on structural and optical properties of thermally evaporated CdSe thin films**
Purohit A.;Chander S.;Nehra A.;Nehra S.P.;Lal C.;Dhaka M.S.
AIP Conference Proceedings, Volume 1661, Year 2015, Pages 050009
38. **Endotaxially stabilized B₂-FeSi nanodots in Si (100) via ion beam co-sputtering**
Cassidy C.;Kioseoglou J.;Singh V.;Grammatikopoulos P.;Lal C.;Sowwan M.
Applied Physics Letters, Volume 104, Year 2014
39. **Electronic structure of Fe₃Si on Si(100) substrates**

Lal C.;Di Santo G.;Caputo M.;Panighel M.;Taleatu B.;Goldoni A.;Jain I.
AIP Conference Proceedings, Volume 1591, Year 2014, Pages 913-915

40. **Conformational adaptation of 2H-Tetraphenylporphyrin at Fe/Si (1 0 0) interface during metalation**

Chhagan Lal, M Caputo, A Goldoni, Indraprabha Jain,
Journal of Materials Research and Technology, Volume 3, Year 2014, Pages 42--47

41. **XPS and some surface characterizations of electrodeposited MgO nanostructure**

Taleatu B.A.;Omotoso E.;Lal C.;Makinde W.O.;Ogundele K.T.;Ajenifuja E.;Lasisi A.R.;Eleruja M.A.;Mola G.T.
Surface and Interface Analysis, Volume 46 (6), Year 2014, Pages 372-377

42. **Formation of metal silicide by swift heavy ion induced mixing at Mn/Si interface**

Verma R.;Lal C.;Jain I.P.
Journal of Materials Research and Technology, Volume 3 (3), Year 2014, Pages 257-263

43. **XPS studies of the adsorption characteristics of 2H-TTP at Fe/Si interface**

Lal, Chhagan and Santo, G D and Caputo, M and Panighel, M and Taleatu, B A and Goldoni, A and Jain, I P
Optoelectronics and Advanced Materials - Rapid Communications, Volume 8 (5-6), Year 2014, Pages 465-469

44. **Evolution of microstructure of Mg + FeTi nanocomposite prepared by mechanical alloying**

Lal C.;Singh V.;Jangir M.;Jain R.K.;Jain I.P.
AIP Conference Proceedings, Volume 1536, Year 2013, Pages 883-884

45. **XPS study of 2H-TTP at Fe/Si(111) system**

Lal C.;Jain I.;Di Santo G.;Caputo M.;Panighel M.;Taleatu B.;Goldoni A.
AIP Conference Proceedings, Volume 1512, Year 2013, Pages 696-697

46. **Review of 2H-tetraphenylporphyrins metalation in ultra-high vacuum on metal surfaces**

Panighel M.;Di Santo G.;Caputo M.;Lal C.;Taleatu B.;Goldoni A.
Journal of Physics: Conference Series, Volume 470, Year 2013, Pages 012012

47. **Effect of ball milling on structural and hydrogen storage properties of Mg-x wt% FeTi (x = 2 & 5) solid solutions**

Lal, Chhagan and Jain, IP
international journal of hydrogen energy, Volume 37, Year 2012, Pages 3761--3766

48. **Hydrogenation effect on structural, electrical and optical properties of CdS thin films for solar cell**

Lal C.;Jain I.
International Journal of Hydrogen Energy, Volume 37(4), Year 2012, Pages 3792-3796

49. **Experimental study of pristine and alkali metal doped picene layers: Confirmation of the insulating phase in multilayer doped compounds**

Caputo M.;Di Santo G.;Parisse P.;Petaccia L.;Floreato L.;Verdini A.;Panighel M.;Struzzi C.;Taleatu B.;Lal C.;Goldoni A.

Journal of Physical Chemistry C, Volume 116, Year 2012, Pages 19902-19908

50. β - FeSi₂ and Schottky barrier at Fe/Si interface

Lal C.;Dhunna R.;Dhaka R.S.;Barman S.R.;Jain I.P.

Journal of Optoelectronics and Advanced Materials, Volume 12, Year 2010, Pages 177-183

51. Hydrogen storage in Mg: A most promising material

I.P. Jain ., Chhagan Lal ., Ankur Jain .,

International Journal of Hydrogen Energy, Volume 35, Year 2010, Pages 5133-5144

52. Ion-beam modifications in Fe-N thin films

Dhunna R.;Lal C.;Agarwal G.;Jain I.P.

Optoelectronics and Advanced Materials, Rapid Communications, Volume 4(10), Year 2010, Pages 1489-1492

53. Ion beam induced effects on structural and magnetic properties of Ni₃N/Si thin film

Dhunna R.;Lal C.;Agarwal G.;Khan S.A.;Avasthi D.K.;Jain I.P.

Optoelectronics and Advanced Materials, Rapid Communications, Volume 4, Year 2010, Pages 187-189

54. Irradiation induced effects on Ni₃N/Si bilayer system

Dhunna R.;Lal C.;Avasthi D.K.;Barman S.R.;Ganesan V.;Jain I.P.

Vacuum, Volume 83, Year 2009, Pages 1448-1453

55. Phase formation, chemical composition and electrical studies of Ti/Si bilayer system

Lal C.;Dhunna R.;Jain I.P.

Vacuum, Volume 83, Year 2009, Pages 931-935

56. Structural and optical properties of AlN/Si system

Renu Dhunna ., Chhagan Lal ., Veenu Sisodia ., D.K. Avasthi ., V. Ganesan ., I.P. Jain .,

Materials Science in Semiconductor Processing, Volume 11(4), Year 2008, Pages 126-130

57. Ion beam induced mixing at Co/Si interface

Agarwal G.;Sharma P.;Jain A.;Lal C.;Kabiraj D.;Jain I.P.

Vacuum, Volume 83(2), Year 2008, Pages 397-400

58. Structural, magnetic and electrical properties of Fe/Si system

Lal C.;Dhunna R.;Jain I.P.

Materials Science in Semiconductor Processing, Volume 11 (1), Year 2008, Pages 1-5

59. Surface morphology and the phase formation at Cr/Si system

S Agarwal, A Jain, C Lal, V Ganesan, IP Jain

Applied Surface Science, Volume 253, Year 2007, Pages 4721-4726

60. Structural and electrical properties of swift heavy ion beam irradiated

Fe/Si interface

Lal C.;Jain R.K.;Jain I.P.

Bulletin of Materials Science, Volume 30, Year 2007, Pages 153-156

61. SHI induced irradiation effect on Mo/Si interface

Garima Agarwal, Shivani Agarwal, Rajkumar Jain, Chhagan Lal, IP Jain, D Kabiraj, Akhilesh Pandey,
DAE Conference SSPS Conference Proceedings, Volume 38(49), Year 2006, Pages