



a. **Name:** Dr. Ravi Nathuram Bathe

b. **Qualification:**

Ph. D. (Physics) 2000

Department of Physics, University of Pune, Pune – 411007, India

Thesis Title: Influence of Dopants and Defects on the Properties of Colossal Magnetoresistance Manganite Systems

M. Sc. (Physics) (First class) 1995

Department of Physics, University of Pune, Pune – 411007, India

B. Sc. (Physics) (First class with distinction) 1993

University of Pune, Pune – 411007, India

c. **Designation:** Scientist

d. **Contact Information:**

International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad 500005, India

Email: ravi@arci.res.in

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e. **Experience:**

Scientist 2003– Present

ARCI, Hyderabad - 500005, India

Visiting Scientist 2009 – 2010

School of Engineering and Applied Sciences, **Harvard University**, Cambridge, USA (IUSSTF Research Fellow)

Young Scientist 2002 – 2003

University of Pune (Fast Track Fellow- DST, India)

Postdoctoral Research Fellow 2000-2002

Center for Superconductivity Research, Department of Physics, **University of Maryland**, College park, USA

Senior Research Fellow 1998-2000

Council of Scientific and Industrial Research (**CSIR**), 1998 – 2000.

Research Fellow 1995-1998

Department of Physics, University of Pune, Pune – 411007, India

f. **Research Areas of Interest:**

- Laser Materials Processing
- Ultrafast laser material interaction
- Laser micromachining

g. **List of Journal Publications:**

1. Kerf quality prediction and optimisation for pulsed Nd:YAG laser cutting of aluminium alloy sheets using GA-ANN hybrid model

- S. Chaki, S. Ghosal, and **Ravi N. Bathe**
Int. J. Mechatronics and Manufacturing Systems, Vol. 5, Nos. 3/4, pp.263–279 (2012).
2. Optimisation of kerf quality during pulsed Nd:YAG cutting of aluminum alloy sheet.
S. Chaki, S. Ghosal, and **Ravi N. Bathe**
Int virtual j. for Machines, Technologies, Materials ISSN 1313-0226, Year-VI, Issue 1, pp. 8-11 (2012)
3. Detection of breakthrough in laser percussion drilling process
N. Sanikommu, **Ravi Bathe** and A. S. Joshi
Lasers in Engineering, 17, 361 (2007).
4. Structural, morphological, and electrical characterization of heteroepitaxial ZnO thin films deposited on Si (100) by pulsed laser deposition: Effect of annealing (800 °C) in air
S. M. Jejurikar, A. G. Banpurkar, A. V. Limaye, S. K. Date, S. I. Patil, K. P. Adhi, P. Misra, L. M. Kukreja, and **Ravi Bathe**
Journal of Applied Physics, 99, 014907, (2006).
5. Influence of magnetic (Fe^{+3}) and non-magnetic (Ga^{+3}) ion doping at Mn-site on the transport and magnetic properties of $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$
M.S. Sahasrabudhe, S. I. Patil, S. K. Date, K. P. Adhi, S. D. Kulkarni, P. A. Joy, and **R. N. Bathe**
Solid State Communications, 137, 595, (2006).
6. Boundary effects on the stability of thin submerged granular piles
S. B. Ogale, **R. N. Bathe**, R. J. Choudhary, S. N. Kale, Abhijit S. Ogale, A. G. Banpurkar, A. V. Limaye
Physica A: Statistical Mechanics and its Applications, 354, 49, (2005).
7. Phase separation scenario in Ba doped LaMnO_3
S. I. Patil, M. S. Sahasrabudhe, S. N. Sadakale, P. R. Sagdeo, **R. N. Bathe**, K. P. Adhi, S. K. Date, and S. M. Bhagat
Physica Status Solidi C, 1 (12): 3623-3627 (2004).
8. Evaluation of manganite films on silicon for uncooled bolometric applications
R. J. Choudhary, Anjali S. Ogale, S. R. Shinde, S. Hullavard, S. B. Ogale, T. Venkatesan, **R. N. Bathe**, S. I. Patil, and Ravi Kumar
Applied Physics Letters, 84, 3846 (2004).
9. Effect of dislocation on luminescence properties of silicon-doped GaN grown by metalorganic chemical vapor deposition method
Jahangir Alam, **Ravi Bathe**, R. D. Vispute, John M. Zavada, Cole A. Litton, Agis A. Liadis, S. Noor Mohammad
Journal of Vacuum Science and Technology B: Microelectronics and Nanometer Structures, 22(2), 6224 (2004).
10. Microwave-hydrothermal accelerated solid state reaction for the synthesis of $\text{La}_{0.5}\text{Ba}_{0.5}\text{MnO}_3$
S. A. Mirji, Y. B. Kholam, S. B. Deshpande, H. S. Potdar, **R. N. Bathe**, S. R. Sainkar, and S. K. Date
Materials Letters, 58, 837 (2004).
11. Effect of ^{57}Fe ion implantation on magnetotransport in epitaxial $\text{La}_{0.67}\text{Ca}_{0.33}\text{MnO}_3$ thin films
Ravi Bathe, S. I. Patil, K. P. Adhi, B. Honneyer, and G. Marest
Journal of Applied Physics, 93, 1127 (2003).
12. Electrical, thermal, and microstructural characteristics of Ti/Al/Ti/Au multilayer Ohmic contacts to n-type GaN

Abhishek Motayed, **Ravi Bathe**, Mark C. Wood, Ousmane S. Diouf, R. D. Vispute, and S. Noor Mohammad

Journal of Applied Physics, 93, 1087 (2003).

13. Effects of Al-doping on the magneto-transport properties of $\text{La}_{0.75}\text{Ca}_{0.25}\text{MnO}_3$.
Ravi Bathe, S.R. Shinde, K.M. Gapchup, K.P. Adhi, and S.I. Patil.
Journal of Magnetism and Magnetic Materials, 256, 425 (2003).
14. Stress origin and relaxation in epitaxial AlN thin films on SiC
Ravi Bathe, R. D. Vispute, Daniel Habersat, R. P. Sharma, T. Venkatesan, C. J. Scozzie, M. H. Ervin, and Ken Jones
Materials Research Society Symposium - Proceedings, 696, 87 (2002).
15. BN protective coating for high temperature applications
Ravi Bathe, R. D. Vispute, Daniel Habersat, Ichiro Takeuchi, R. P. Sharma, T. Venkatesan. T. S. Zheleva, and Ken Jones
Materials Research Society Symposium - Proceedings, 697, 61 (2002).
16. AlN thin films deposited by pulsed laser ablation, sputtering and filtered arc techniques
Ravi Bathe, R. D. Vispute, Dan Habersat, R. P. Sharma, T. Venkatesan, C. J. Scozzie, Matt Ervin, B. R. Geil, A. J. Lelis, S. J. Dikshit, and R. Bhattacharya
Thin Solid films, 398-399, 576 (2001).
17. Silver ion implantation in epitaxial $\text{La}_{2/3}\text{Ca}_{1/3}\text{MnO}_3$ thin films: Large temperature coefficient of resistance (TCR) for bolometric applications.
Ravi Bathe, K. P. Adhi, S. I. Patil, G. Marest, B. Honneyer, and S. B. Ogale.
Applied Physics Letters, 76, 2104 (2000).
18. Columnar defect induced phase transformation in epitaxial $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ films

S. B. Ogale, Y. H. Li, M. Rajeswari, L. S. Riba, R. Ramesh, T. Venkatesan, A. J. Millis, R. Kumar, G. K. Mehta, **Ravi Bathe**, and S. I. Patil

Journal of Applied Physics, 87, 4210 (2000).
19. Colossal magnetoresistance and hyperfine interactions in iron doped $\text{La}_{0.75}\text{Ca}_{0.25}\text{MnO}_3$.

B. Hannyer, G. Marest, J. M. Greneche, **Ravi Bathe**, S. I. Patil and S. B. Ogale.
Physical Review B - Condensed Matter and Materials Physics, 61, 9613 (2000).
20. Transition-element doping effects in $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$.
K. Ghosh, S. B. Ogale, R. Ramesh, R. L. Greene, T. Venkatesan, K. M. Gapchup, **Ravi Bathe** and S. I. Patil.
Physical Review B - Condensed Matter and Materials Physics, 59, 533-537 (1999).
21. Electronic transport and 1/f noise studies in 250 MeV ^{107}Ag ion irradiated $\text{La}_{0.75}\text{Ca}_{0.25}\text{MnO}_3$ thin films.
S. K. Arora, Ravi Kumar, Rajendra Singh, D. Kanjilal, G. K. Mehta, **Ravi Bathe**, S. I. Patil and S. B. Ogale.
Journal of Applied Physics, 86, 4452-4457, (1999).
22. Swift heavy ion irradiation effects on transport properties of epitaxial thin films of $\text{La}_{1-x}\text{Ca}_x\text{MnO}_3$.
Ravi Kumar, S. K. Arora, D. Kanjilal, G. K. Mehta, **Ravi Bathe**, S. K. Date, S. R. Shinde, L. V. Saraf, S. B. Ogale and S. I. Patil.
Radiation Effects and Defects in Solids, 147, 187 (1999).
23. Noise properties of swift heavy ion irradiated $\text{La}_{0.75}\text{Ca}_{0.25}\text{MnO}_3$ thin films
S. Singh, S. K. Arora, Ravi Kumar, Ravi Bathe, S. I. Patil, S. B. Ogale, D. Kanjilal, and G. K. Mehta
Solid State Physics, 41, 460-461 (1999).
24. 90 MeV ^{16}O ion irradiation effects on transport and magnetization in epitaxial thin films of $\text{La}_{0.75}\text{Ca}_{0.25}\text{MnO}_3$.
Ravi Bathe, S. K. Date, S. R. Shinde, L. V. Saraf, S. B. Ogale, S. I. Patil, Ravi Kumar, S. K. Arora, and G. K. Mehta.
Journal of Applied Physics, 83, 7174-76 (1998).
25. Transport properties, magnetic ordering, and hyperfine interaction in Fe doped $\text{La}_{0.75}\text{Ca}_{0.25}\text{MnO}_3$: Localization-delocalization transition.

- S. B. Ogale, R. Shreekala, **Ravi Bathe**, S. K. Date, S. I. Patil, B. Hannoyer, F. Petit, and G. Marest.
Physical Review B - Condensed Matter and Materials Physics, 57, 7841-45 (1998).
26. Influence of 90 MeV Oxygen ion induced disorder on the magnetotransport in epitaxial $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$ thin films.
S. B. Ogale, K. Ghosh, J. Y. Gu, R. Shreekala, S. R. Shinde, M. Downes, M. Rajeswari, R. P. Sharma, R. L. Greene, T. Venkatesan, R. Ramesh, **Ravi Bathe**, S. I. Patil, Ravi Kumar, S. K. Arora, and G. K. Mehta.
Journal of Applied Physics, 84, 6255-61 (1998).
27. 1/f noise properties of $\text{La}_{1-x}\text{Ca}_x\text{MnO}_3$ thin film.
S. K. Arora, Ravi Kumar, D. Kanjilal, **Ravi Bathe**, S. I. Patil, S. B. Ogale and G. K. Mehta.
Solid State Communications, 108, 959-963 (1998).

h. List of Patents: - -

i. Conference Proceedings:

Laser Micromachining

Ravi Bathe

A National Seminar on ***MICROMACHINING*** organized by Department of Mechanical Engineering, R.V.R & J.C College of Engineering, Gantur, on 19-20 December 2008.

Laser Drilling of Thermal Barrier Coated Superalloy Component

Ravi Bathe

DRDO Golden Jubilee Theme Symposium ***Thermal Barrier Coatings – 2008*** in DMRL on 18 July 2008.

Investigation of Laser Drilling of Precision Holes

Ravi Bathe and G. Padmanabham

International Conference on Advances in Manufacturing Technology (ICAMT 2008) for Young Engineers, February 6-8, 2008, IITM, Chennai, India

Laser Drilling and Machining for Automotive Applications

Ravi Bathe

ARCI-SAE India TopTech Workshop on “Application of Laser in Automotive Manufacturing”, 18-19 Dec 2007, ARCI, Hyderabad, India

Synthesis of Epitaxial AlN thin films by Pulsed Laser Deposition

Ravi Bathe (Invited talk)

3rd National Symposium on Pulsed Laser Deposition of Thin Films and Nanostructured materials (PLD-2005) held at Department of Physics, Sri Venkateswara University, Tirupati on November 7 - 8, 2005.

Growth of Wide Band Gap semiconductors by Pulsed Laser Deposition Technique

Ravi Bathe (Invited talk)

Second National Symposium on Pulsed Laser Deposition of Thin Films (PLD-2003) held at Department of Physics, University of Pune, Pune, November 14-15, 2003.

Stress origin and relaxation in epitaxial AlN thin films on SiC

Ravi Bathe, R. D. Vispute, Daniel Habersat, R. P. Sharma, T. Venkatesan, C. J. Scozzie, M. H. Ervin, and Ken Jones

Materials Research Society, Fall Meeting, Boston, MA, USA, November 26-29, 2001.

BN protective coating for high temperature applications

Ravi Bathe, R. D. Vispute, Daniel Habersat, Ichiro Takeuchi, R. P. Sharma, T. Venkatesan, T. S. Zheleva, and Ken Jones

Materials Research Society, Fall Meeting, Boston, MA, USA, November 26-29, 2001.

Composition tuning of ZnMgO thin films for UV detector technology

R.D. Vispute, Ichiro Takeuchi, W. Yang, Kao Suo, Ravi Bathe, R. P. Sharma, H. Shen, and T. Venkatesan.

Materials Research Society, Fall Meeting, Boston, MA, USA, November 26-29, 2001.

j. Contribution to Books: - -

k. Affiliation to Professional Societies: - -

l. Awards and Honors:

- * **IUSSTF Research Fellowship** (School of Engineering and Applied Sciences, Harvard University, Cambridge, USA), 2009 - 2010
- * **Young Scientist** (Department of Science and Technology, DST), 2002 - 2003
- * **Post Doctoral Research Fellowship** (Center for Superconductivity Research, Department of Physics, **University of Maryland**, USA), 2000 - 2002.
- * **Senior Research Fellowship** (Council of Scientific and Industrial Research (**CSIR**)), 1998 – 2000.
- * **Junior Research Fellowship** (Indo-US project), 1995-1998.