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Assistant professor in Physics



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Birth Date: 19th Feb. 1968

Qualifications: M. Sc. Ph.D. (Physics)

Teaching 12 years (Master of Physics)

Experience :

Research experience: 18 years, including doctoral research experience in the University Departments.

Postdoctoral research:

1. *Physics of Complex Fluid, University of Twente, The Netherlands.* (June 07 to June 08)
2. *Physics of Complex Fluid, University of Twente, The Netherlands.* (June-July 09)
3. *Physics of Complex Fluid, University of Twente, The Netherlands.* (June-Aug 10)
4. *Physics of Complex Fluid, University of Twente, The Netherlands.* (June-July 12)

Awards and Achievements: BOYSCOST fellowship (Department of science and Technology, Govt. of India)

Achievements:

Research interest: Wetting and Spreading, Electrowetting, Micro-fluidic, Experimental study of the pattern formation in confined Hele-Shaw flows, Simulation studies in growth models.

International and National Collaborations: Physics of Complex fluids (PCF), University of Twente, Enschede, The Netherlands (www.utwente.nl/tnw/pcf), **National Chemical Laboratory (NCL) Pune**

Research Schemes:

- 5 Droplet Actuation by Electrowetting on Dielectric (EW) for Lab on Chip Applications (BCUD, Pune University Rs 3.00 Lakhs) 2011-2013
- 4 Electrowetting-Based Adaptive Lenses and Sensors for Measurement of Vibration and Surface Charge Density (ISRO ,result awaited, Amount Rs 18.65 Lakhs)
3. Study of hydrodynamic resistance in a rectilinear micro-fluidic channel (Funded by University of Pune) (2009-2011)
2. Growth and Characterization of Magnetotactic Bacteria and Magnetic-



University of Pune

nano-particles (Funding from: University of Pune) (2006-2008)

1. SERC fact track project for young scientists titled 'Studies of the Formation of Patterns for Various Liquids in Hele-Shaw Cell and Taylor-Couette Flows' (Funding from: **DST** Gov. of India)

Research Publications:

32. [Use of Electrowetting to Measure Dynamical Interfacial Tension of a Microdrop](#)
Riëlle de Ruiter, Peter Wennink, [Arun G. Banpurkar](#), Michèl H. G. Duits, and Frieder Mugele
Lab Chip, **12**, 2832 (2012)
31. [A Quasi-Liquid Iontronic-Electronic Light-Harvesting Hybrid Photodetector with Giant Response](#)
L. Mandal, M. Deo, A. Yengantiwar, A. Banpurkar, J. Jog, and S. Ogale,
Advanced Materials **24** 3686 (2012).
30. [Quantum dot bio-conjugate: as a western blot probe for highly sensitive detection of cellular proteins](#)
S. Kale, A. Kale, H. Gholap, A. Rana, R. Desai, A. Banpurkar, S. Ogale, and P. Shastry
Journal of Nanoparticle Research **14** (3) (2012).
29. [Concurrent synthetic control of dopant \(nitrogen\) and defect complexes to realize broadband \(UV-650 nm\) absorption in ZnO nanorods for superior photo-electrochemical performance](#)
O. Game, U. Singh, A. A. Gupta, A. Suryawanshi, A. Banpurkar, and S. Ogale
Journal of Material Chemistry **22**, 17302 (2012).
28. [Strong photo-response in a flip-chip nanowire p-Cu₂O/n-ZnO junction](#)
M. Deo, S. Mujawar, O. Game, A. Yengantiwar, A. Banpurkar, S. Kulkarni, J. Jog, and S. Ogale
Nanoscale **3**, 4706 (2011).
27. [Growth Kinetics Study of Pulsed Laser Deposited ZnO Thin Films on Si \(100\) Substrate](#)
Deepak N. Bankar, Suhas M. Jejurikar, K. P. Adhi, A. V. Limaye and [A. G. Banpurkar](#)
AIP Conf. Proc. **1391**, 101 (2011)
26. [Fabrication of UV Photoswitchable ZnO Nanorod Based Varistor on Trenched Cu-Electrode](#)
Ashish Yengantiwar and [Arun Banpurkar](#)
(communicated to *AIP Advances*)
25. [Growth of aligned ZnO nanorods array on ITO for dye sensitized solar cell](#)
Ashish Yengantiwar, Ramakant Sharma, Onkar Game and [Arun Banpurkar](#)
Current Applied Physics **11**, S113 (2010). (Impact Factor: 1.707)
24. [Study of functional properties of *Sapindus mukorossi* as a potential bio-surfactant](#)
Rupeshkumar Ghagi, Surekha K. Satpute, Balu A. Chopade and [Arun G. Banpurkar](#)
Indian Journal of Science and Technology **4**, 19 (2011). (ISSN: 0974-5645)
23. [Biosurfactant, bioemulsifier and exopolysaccharides from marine microorganism](#)
Surekha K. Satpute, Ibrahim M. Banat, P. K. Dhakephalkar, [Arun. G. Banpurkar](#) and Balu A. Chopade
Biotechnology Advance **28**, 436 (2010). (Impact Factor: 9.038)
22. [Methods for investigating biosurfactants and bioemulsifiers: a review](#)
Surekha K. Satpute, Arun G. Banpurkar, Prashant K. Dhakephalkar, Ibrahim M. Banat, and Balu A. Chopade
Critical Reviews in Biotechnology **30**, 127 (2010). (Impact factor 3.57)
21. [On the change in bacterial size and magnetosome features for *Magnetospirillum magnetotacticum* \(MS-1\) under high concentrations of zinc and nickel](#)
S. Kundu, A.A. Kale, [A.G. Banpurkar](#), G.R. Kulkarni and S.B. Ogale
Biomaterials **30**, 4211 (2009).
20. [Hydrodynamic resistance of single confined moving drops in rectangular microchannels](#)
Siva A. Vanapalli, [Arun G. Banpurkar](#), Dirk van den Ende, Michel H. G. Duits and Frieder Mugele
Lab on Chip, **9**, 983 (2009).
19. [Electrowetting of Complex Fluids: Perspectives for Rheometry on Chip](#)
[A. G. Banpurkar](#), M. H. G. Duits, D. van den Ende, and F. Mugele
Langmuir, **25**, 1245 (2009).



University of Pune

18. [Electrowetting-based micro drop tensiometer](#)
Arun G. Banpurkar, Kevin P. Nichols and Frieder Mugele
Langmuir **24**, 10549 (2008).
17. [Electrowetting-A versatile tool for controlling microdrop generation](#)
F. Malloggi, H. Gu, A. G. Banpurkar, S. A. Vanapalli, and F. Mugele
European Physical Journal E, **26**, 91 (2008).
16. [Segregation of fractal aggregates grown from two seeds](#)
Deepak N. Bankar, P. M. Gade, A. V. Limaye and A. G. Banpurkar
Physical Review E **75**, 051401 (2007).
15. [Impact of orientational distribution of adsorbing objects on dynamics of Random Sequential Ballistic Adsorption \(RSBA\) dynamics](#)
P. B. Shelke, A. G. Banpurkar, S. B. Ogale SB, and A. V. Limaye
Surface Science **601**, 5010 (2007).
14. [Effect of swift heavy ion irradiation on the surface morphology of highly c-axis oriented LSMO thin films grown by pulsed laser deposition](#)
M. S. Sahasrabudhe, Deepak N. Bankar, A. G. Banpurkar, and S. I. Patil, K. P. Adhi, Ravi Kumar
Nuclear Instruments and Methods **263**, 407 (2007).
13. [Universality of the power-law approach to the jamming limit in random sequential adsorption dynamics](#)
P. B. Shelke, M. D. Khandkar, A. G. Banpurkar, S. B. Ogale and A. V. Limaye
Physical Review E **75**, 06060 (2007).
12. [Growth temperature and N₂ ambient pressure-dependent crystalline orientations and band gaps of pulsed laser-deposited AlN/\(0001\) sapphire thin films](#)
S. M. Jejurikar, A. G. Banpurkar, D. N. Bankar, K. P Adhi, L. M. Kukreja, V. G. Sathe
Journal of Crystal Growth **304**, 257 (2007).
11. [Blocking effects in irreversible adsorption of linear macromolecules](#)
P. B. Shelke, A. G. Banpurkar, S. B. Ogale and A. V. Limaye
Surface Science **601**, 274 (2007).
10. [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 and K. P. Adhi, P. Mishra and L. M. Kukreja
Journal of applied Physics, **99**, 014907 (2006).
9. [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, **354**, 49 (2005).
8. [Growth and properties of pulsed laser deposited Fe₃O₄ / La_{0.7}Ca_{0.3}MnO₃ bilayers](#)
S. N. Sadakale, R. J. Choudhary, M. S. Sahasrabudhe, A. G. Banpurkar, K. P Adhi, S. I. Patil and S. K. Date.
J. Magnetism and Magnetic Materials (JMMM) **286**, 450 (2005).
7. [Room- Temperature synthesis of Aragoite crystal at an Expanding liquid-liquid interface in a radial Hele –Shaw cell](#)
Debabrat Rautaray, Arun Banpurkar, Sudhakar R. Sainkar, Abhay V. Limaye, Neela R. Pavaskar, Satish B. Ogale and Muraly Sastry
Advanced Materials **15**, 1273 (2003).
6. [BaSO₄ crystal grown at an expanding liquid-liquid interface in a Radial Hele-Shaw cell show spontaneous large -scale assembly.](#)
Debabrat Rautaray, Arun Banpurkar, Sudhakar R. Sainkar, Abhay V. Limaye, Satish B. Ogale and Muraly Sastry
Crystal Growth and Design **3**, 449 (2003).
5. [Variation in Viscous Fingering Pattern Morphology due to Surfactant-Mediated Interfacial Recognition Events](#)
Murali Sastry, Anand Gole, A.G. Banpurkar, A.V. Limaye and S.B. Ogale
Current Science, **81**,191 (2001).
4. [Magnetic properties of nano-sized powders of magnetic oxides synthesized by pulsed laser ablation](#)
S.R. Shinde, S.D. Kulkarni, A.G. Banpurkar, Rashmi Nawathey-Dixit, S.K. Date, and S.B. Ogale
Journal of Applied Physics, **88**, 1566 (2000).
3. [Occurrence of coexisting dendrite morphologies: Immiscible fluid displacement in an anisotropic radial Hele- Shaw cell under a high flow rate regime](#)
A. G. Banpurkar, A. V. Limaye and S. B. Ogale



University of Pune

- Physical Review E 61, 5507 (2000).**
2. [Viscous Fingering of miscible fluids in an Anisotropic Radial Hele-Shaw cell: Coexistence of Kinetic and Surface-tension dendrite morphology types and an exploration of small scale influences.](#)
[A. G. Banpurkar](#), Abhijit S. Ogale, A. V. Limaye and S. B. Ogale.
Physical Review E 59, 2188 (1999).
 1. [Synthesis of Ultrafine/Nanosize Powders of Iron Oxide by Pulsed Laser Ablation and Cold Condensation.](#)
S. R. Shinde, [A. G. Banpurkar](#), K. P. Adhi, A. V. Limaye, S. B. Ogale, S. K. Date and G. Marest
Modern Physics Letters B. 10, 1517 (1996).

Conference publication:

6. Determination of dynamic interfacial tension and interfacial rheological properties by electrowetting.
R. de. Ruiter, P. Wennink, [A. G. Banpurkar](#), M.H.G. Duits, & F. Mugele
International Meeting on Electrowetting: Pohang, South Korea (23 -26 June 2010). [poster]
5. Electrowetting based microliter-drop rheometer and interfacial tensiometer
[Arun Banpurkar](#), Michel H. Duits, Dirk van der Ende and Mugele Frieder
The XVth International Congress on Rheology, Monterey California (USA). [oral presentation]
4. 1st Training School, Physico-chemical and flow behavior of droplet-based systems
Villa Orlandi Capri (Italy) (May 2008). [poster presentation]
3. Controlling drop generation, size and traffic in microfluidic devices
Siva A. Vanapalli, [Arun Banpurkar](#), Dirk van den Ende, Florent Malloggi, Gu Hao, Michel Duits and Frieder Mugele,
American Institute of Chemical Engineers, (AIChE- 2008), USA [oral presentation]
2. Hydrodynamic resistance of drop in a rectilinear microfluidic channel
Foundation for Fundamentals on Matter (FOM) meeting, Veldhoven, The Netherlands (Jan 2008)
[poster]
1. Electrowetting on dielectric as a microdrop tensiometer
[Arun Banpurkar](#), Michel H. Duits and Mugele Frieder
Bijeenkomst CW-studiegroep Vloeistoffen& Grensvsvlakken, Luntern, The Netherlands (Feb. 2008) [oral presentation]

Membership:

1. **Indian Physics Association (Pune chapter)**
2. **Material Research Society of India (MRSI, India)**

(03-11-2012)