

CONTACT INFORMATION

Professor
International Centre for Materials Science & School of Advanced Materials
Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR)
Jakkur P.O., Bangalore 560064, INDIA

Email: rajeshg@jncasr.ac.in
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RESEARCH INTERESTS

Soft and active matter: Colloidal suspensions, gels, dense liquids and glasses, active liquids and glasses, driven soft matter, nucleation and growth, soft matter on non-Euclidean surfaces, surface growth, rheology of dense suspensions, stochastic heat engines.

EMPLOYMENT

06/2021 – present	Professor, International Centre for Materials Science, JNCASR
06/2015 – 06/2021	Associate Professor, International Centre for Materials Science, JNCASR
06/2009 – 06/2015	Assistant Professor, International Centre for Materials Science, JNCASR
01/2007 – 05/2009	Postdoctoral Fellow, Dept. of Physics, Cornell University, Ithaca, NY, USA
06/1999 – 06/2000	Research Officer, Hindustan-Unilever Research Centre, Bangalore, INDIA

EDUCATION

06/2000 – 06/2006	Ph.D. in Physics, Indian Institute of Science, Bangalore, INDIA
06/1997 – 06/1999	M.Sc. in Physics, Indian Institute of Technology, Chennai, INDIA

HONORS AND AWARDS

2020	Shanti Swarup Bhatnagar Prize for Science and Technology (Physical Sciences)
2016	SwarnaJayanti Fellowship in Physical Sciences, Department of Science and Technology, Govt. of INDIA
2016	N S Satyamurthy Young Scientist Award 2014 of the Indian Physics Association
2016	Sheikh Saqr Career Research Award
2010	Elected as the Young Associate of the Indian Academy of Sciences, Bangalore, INDIA

ACADEMIC SERVICE

Journal referee for Nature Physics, PNAS, Science Advances, Nature Communications, Physical Review X, Physical Review Letters, ACS Nano, Physical review E, Journal of Chemical Physics, Physical Chemistry Chemical Physics, Langmuir, Soft Matter, European Physical Journal, Current Science and Scientific Reports
Research grant reviewer for Netherlands Organization for Scientific Research, Israel Science Foundation, Dept. of Science and Technology, GoI

OTHER SERVICE**Institute Service**

- (2021 – present) Member ex-officio Academic Council, JNCASR, Bangalore, INDIA
- (2019 – present) Member of the JNC@30 Committee, JNCASR, Bangalore INDIA
- (2019 – present) Member of the Complab Committee, JNCASR, Bangalore INDIA

- (2017 – present) Member Internal Complaints Committee, JNCASR, Bangalore INDIA
- (2014 – present) Member of the Safety Committee, JNCASR, Bangalore INDIA
- (2018 – 2021) Member of the Purchase Committee, JNCASR, Bangalore INDIA

Department Service

- (2019 – present) Coordinator Integrated PhD Program in Materials Science, Chemistry and Physics of Materials Unit

CURRENT RESEARCH FUNDING

2016 – 2021	Glass Transition, Project fund - ₹1.6 Cr (USD ~ 230K), SwarnaJayanti Fellowship, Department of Science and Technology, Govt. of INDIA
2017 – 2020	Colloidal Epitaxy, Project fund - ₹1.8 Cr (USD ~ 250K), Nanomission Grant Department of Science and Technology, Govt. of INDIA

SELECTED RESEARCH PUBLICATIONS

- Tuning the Performance of a Micrometer-sized Stirling Engine by Reservoir Engineering
Nioyendu Roy, Nathan Leroux, A K Sood and Rajesh Ganapathy
Nature Comm. 12, 4927 (2021)
- Emergent Stereoselective Interactions and Self-recognition in Polar Chiral Active Ellipsoids
Pragya Arora, A K Sood and Rajesh Ganapathy
Science Adv. 7, eabd0331 (2021)
- Structure Determines Where Crystallization Occurs in a Soft Colloidal Glass
Divya Ganapathi, Dibyashree Chakrabarti, A k Sood and Rajesh Ganapathy
Nature Phys. 17, 114 (2021)
- Cooperatively Rearranging Regions Change Shape Near the Mode-coupling Crossover for Colloidal Liquids on a Sphere
Navneet Singh, A K Sood and Rajesh Ganapathy
Nature Comm. 11, 4967 (2020)
- Role of Particle Orientational Order During Shear-thickening in Suspensions of Colloidal Rods
Vikram Rathee, Srishti Arora, Dan Blair, Jeff Urbach, A K Sood and Rajesh Ganapathy
Phys. Rev. E 101, 040601(R) (2020)
- Cooperative Rearrangements Facilitate the Self-organised Growth of Colloidal Crystal Arrays on Strain-relief Patterns
Manodeep Mondal, Chandan K Mishra, Rajdeep Banerjee, Shobhana Narasimhan, A K Sood and Rajesh Ganapathy
Science Adv. 6, Issue 10, eaay8418 (2020)
- Long-wavelength Fluctuations and Anomalous Dynamics in 2-Dimensional Liquids
Yan-Wei Li, Chandan K. Mishra, Zhao-Yan Sun, Kun Zhao, Thomas G. Mason, Rajesh Ganapathy, and Massimo Pica Ciamarra
Proc. Natl. Acad. Sci. U.S.A. 116, 22977 (2019)
Featured in numerous popular science outlets including EurekAlert, PhysOrg, ScienceDaily, PopularMechanics
- Strength of Mechanical Memories is Maximal at the Yield Point of a Soft Glass
Srimayee Mukherji, Neelima Kandula, A K Sood and Rajesh Ganapathy
Phys. Rev. Lett. 122 158001 (2019)
Highlighted as Editor's Suggestion and featured on the cover of Apr 19th, 2019 Issue

- Measurements of Growing Surface Tension of Amorphous-Amorphous Interfaces on Approaching the Colloidal Glass Transition
Divya Ganapathi, Hima K Nagamanasa, A K Sood and Rajesh Ganapathy
***Nature Commun.* 9, 397 (2018)**
- Crystallization: Brought to the Surface
Rajesh Ganapathy and Ajay K Sood
News & Views
***Nature Phys.* 13, 421 (2017)**
- Site-specific Colloidal Crystal Nucleation by Template-enhanced Particle Transport
Chandan K Mishra, A K Sood and Rajesh Ganapathy
***Proc. Natl. Acad. Sci. U.S.A.* 113, 12094 (2016)**
**Media Coverage: The Hindu
- A Micrometer-sized Heat Engine Operating Between Bacterial Reservoirs
Sudeesh Krishnamurthy, Subho Ghosh, Dipankar Chatterji, Rajesh Ganapathy and A K Sood
***Nature Phys.* 12, 1134 (2016)**
**Media Coverage: Nature India, Deccan Herald, The Hindu, Prajavani
- Deconstructing the Structural Glass Transition Through Critical Experiments on Colloids
Shreyas Gokhale, A K Sood and Rajesh Ganapathy
***Adv. Phys.* 65, 363 (2016)**
- Localised Excitations and the Morphology of Cooperatively Rearranging Regions in a Colloidal Glass-Forming Liquid
Shreyas Gokhale, Rajesh Ganapathy, Hima K Nagamanasa and AK Sood
***Phys. Rev. Lett.* 116, 068305 (2016)**
- Shape of Dynamical Heterogeneities and the Fractional Stokes-Einstein and Stokes-Einstein Debye Relation in Quasi Two-Dimensional Suspensions of Colloidal Ellipsoids
Chandan K Mishra and Rajesh Ganapathy
***Phys. Rev. Lett.* 114, 198302 (2015)**
- Direct Measurements of Growing Amorphous Order and Non-monotonic Dynamic Correlations in a Colloidal Glass Former
Hima K Nagamanasa, Shreyas Gokhale, A. K. Sood and Rajesh Ganapathy
***Nature Phys.* 11, No 5, 365 (2015)**
** Featured as the cover page of Nature Physics (May 2015)
** Media coverage: Deccan Herald, Rajyasabha TV
- Dynamical Facilitation Governs Glassy Dynamics in Suspensions of Colloidal Ellipsoids
Chandan K Mishra, Hima K Nagamanasa, Rajesh Ganapathy, A. K. Sood and Shreyas Gokhale
***Proc. Natl. Acad. Sci. U.S.A.* 111, 15362, (2014)**
** Media coverage: Featured in The Telegraph
- Growing Dynamical Facilitation on Approaching the Random Pinning Colloidal Glass Transition
Shreyas Gokhale, Hima K Nagamanasa, Rajesh Ganapathy and A. K. Sood
***Nature Commun.* 5, (2014)**
- Experimental Signatures of a Nonequilibrium Phase Transition Governing Yielding of A Soft Glass
Hima K Nagamanasa, Shreyas Gokhale, A. K. Sood and Rajesh Ganapathy
***Phys. Rev. E* 89, 062308 (2014)**
- Entropy Driven Crystal Formation on Highly Strained Substrates
John R Savage, Stefan R Hopp, Rajesh Ganapathy, Sharon Gerbode, Andreas Heuer and Itai Cohen
***Proc. Natl. Acad. Sci. U.S.A.* 110, 9301, (2013)**

- Grain Growth and Grain Boundary Dynamics in Colloidal Crystals
Shreyas Gokhale, Hima K Nagamanasa, Rajesh Ganapathy and A. K. Sood
***Soft Matter* 9, 6634 (2013)**
** Invited contribution towards Themed Issue on Emerging Investigators in Soft Matter
- Two-step Glass Transition Induced by Attractive Interactions in Quasi-two-dimensional Suspensions of Ellipsoidal Particles
Chandan K Mishra, Amritha Rangarajan and Rajesh Ganapathy
***Phys. Rev. Lett.* 110, 188301 (2013)**
- Directional Grain Growth from Anisotropic Roughening of Grain Boundaries in Sheared Colloidal Crystals
Shreyas Gokhale, Hima K Nagamanasa, V Santhosh, A. K. Sood and Rajesh Ganapathy
***Proc. Natl. Acad. Sci. U.S.A.* 109, 20314 (2012)**
** Media coverage: Featured in articles in Deccan Herald and The Hindustan Times
- Confined Glassy Dynamics at Grain Boundaries in Colloidal Crystals
Hima K Nagamanasa, Shreyas Gokhale, Rajesh Ganapathy and A. K. Sood
***Proc. Natl. Acad. Sci. U.S.A.* 108, 11323 (2011)**
- Direct Measurements of Island Growth and Step-edge Barriers in Colloidal Epitaxy
Rajesh Ganapathy, Mark R. Buckley, Sharon Gerbode and Itai Cohen
***Science* 327, 445 (2010)**
** Media coverage: Featured in NSF News, Phys Org, Cornell Chronicle and numerous other media outlets
- Intermittency Route to Rheochaos in Wormlike Flow-Concentration Coupling
Rajesh Ganapathy and A. K. Sood
***Phys. Rev. Lett.* 96, 108301 (2006)**

INVITED TALKS

- (2008) International Centre for Materials Science, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2009) Raman Research Institute, Bangalore, INDIA
- (2009) Chemistry of Materials conference, Allepey, Kerala, INDIA
- (2009) Department of Chemistry, Indian Institute of Technology Madras, Chennai INDIA
- (2010) ICAM-I2CAM Conference, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2010) Indira Gandhi Centre for Atomic Research, Kalpakam, INDIA
- (2010) National Chemical Laboratories, Pune, INDIA
- (2010) Cambridge UK-JNCASR Winter School on the Physics and Chemistry of Materials, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2011) US-India-Israel Workshop on Soft & Hybrid Matter, Northwestern University, Chicago, U.S.A.
- (2011) Indian Academy of Sciences 22nd Midyear Meeting, Indian Institute of Science, Bangalore, INDIA
- (2011) Current Topics in Condensed Matter, IISER Kolkata, Kolkata, INDIA
- (2011) Dynamics of Phase Transitions, JNCASR, Bangalore, INDIA
- (2011) 56th Solid State Physics Symposium - Department of Atomic Energy, SRM University, Chennai, Tamil Nadu
- (2012) J A Krumhansl School and Conference on Unifying Concepts in Materials Science, NCBS, Bangalore, INDIA
- (2012) Annual Faculty Meet and In-house, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2012) Cambridge UK-JNCASR Winter School on Frontiers in Materials Science, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2012) Theoretical Sciences Unit Seminar, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA

- (2013) Indo-Australia Joint Workshop-II, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2013) Indo-Israel Conference on Material Science and Nanoscience, Mahatma Gandhi University, Kottayam, Kerala, INDIA
- (2013) 8th JNCASR Conference on Chemistry of Materials, Taj Vivanta, Trivandrum, Kerala, INDIA
- (2014) TIFR-Centre for Interdisciplinary Sciences, Hyderabad, INDIA
- (2014) Engineering Mechanics Unit Colloquium, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2014) JNCASR-Cambridge Winter School on Directions in Materials Science, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2014) 6th Indo-Israeli Meeting on Frontiers in Condensed Matter Physics, Tel Aviv, ISRAEL
- (2014) Compflu, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2015) The Nonlinear Physics of Disordered Systems: From Amorphous Solids to Complex Flows, International Centre for Theoretical Sciences, TIFR, Bangalore, INDIA
- (2015) New Colloids, Raman Research Institute, Bangalore, INDIA
- (2015) Physics Colloquium, Dept. Of Physics, Indian Institute of Science, Bangalore, INDIA
- (2015) 10th JNCASR Conference on Chemistry of Materials, Allepey, Kerala, INDIA
- (2015) Growing Length Scale Phenomena in Condensed Matter, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2016) Compflu-2015, Indian Institute of Science Education and Research, Pune, INDIA
- (2016) International Workshop on Advanced Materials, RAK-CAM, Ras Al Khaimah, UAE
- (2016) Contemporary Issues in Condensed Matter Physics, Dept. of Physics, Indian Institute of Science, Bangalore, INDIA
- (2016) Annual Meeting of the Indian Physics Association, Bhabha Atomic Research Centre, Mumbai, INDIA
- (2016) Indo-French Meeting on Advances in Physics and Chemistry of Materials, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2016) Compflu-2016, International Institute of Information Technology, Hyderabad, INDIA
- (2017) Physics Department Colloquium, Indian Association for the Cultivation of Sciences, Kolkata, INDIA
- (2017) Workshop on Glasses and Other Nonequilibrium Systems, Osaka University, Osaka Japan
- (2017) Physics Department Seminar, Indian Institute of Science Education and Research Pune, Pune, INDIA
- (2017) Conference on Correlation and Disorder in Classical and Quantum Systems, International Centre for Theoretical Studies, Bangalore, INDIA
- (2017) CeNSE Department Seminar, Indian Institute of Science, Bangalore, INDIA
- (2017) Infosys Condensed Matter Physics Seminar, Tata Institute of Fundamental Research, Mumbai, INDIA
- (2017) 7th Indo-Israeli Meeting on Frontiers in Condensed Matter Physics, Indian Institute of Science, Bangalore, INDIA
- (2017) JNCASR-Cambridge Winter School on Frontiers in Materials Science, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2017) Compflu-2017, Indian Institute of Technology-Madras, INDIA
- (2018) Raman Research Institute, Bangalore, INDIA
- (2018) IBS-UNST Soft Matter Conference, IBS Ulsan, South Korea
- (2018) Unifying Concepts in Glass Physics, Univ. of Bristol, Bristol, UK
- (2018) CNR Rao Oration Award Lecture, JNCASR, Bangalore, INDIA
- (2018) Annual Faculty Meet and In-house, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2018) Dept. of Atomic Energy, Solid State Physics Symposium, Hisar, Haryana, INDIA
- (2019) SAMat Meet, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2019) Discrete Simulations of Fluid Dynamics, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2019) International Workshop on Glass Physics, Institute for Theoretical Physics-Chinese Academy of Sciences, Beijing, CHINA

- (2019) 15th JNCASR Conference on Chemistry of Materials, Allepey, Kerala, INDIA
- (2020) SAMat Special Lecture by SSB Prize Awardees, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2020) Institute Colloquium, Tata Institute of Fundamental Research, Mumbai, INDIA
- (2020) Weekly seminar, Dept. of Chemical Engineering, Indian Institute of Science, Bangalore, INDIA
- (2020) Compflu-2020, Indian Institute of Technology, Mumbai, INDIA
- (2020) Monthly Colloquium, International Centre for Theoretical Studies, Bangalore, INDIA
- (2021) SS Bhatnagar Lecture Series, Indian Institute of Technology – Ropar, Punjab, INDIA
- (2021) Webinar, Soft Matter Group, Dept. of Physics, Univ. of Gothenburg, SWEDEN

INVITED OUTREACH TALKS

- (2010) National Science Day, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2010) Physics Day, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2011) JBNSTS Scholars, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2011) Inspire Fellowship Scholars, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2012) Program in Physics for Students, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2014) Program in Physics for Students, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2017) Program in Physics for Students, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, INDIA
- (2020) Exploring Science with SSB Awardees, Popular Science Talk, Council of Scientific and Industrial Research, INDIA
- (2020) Science Playground-2, Society for Promotion of Science and Technology in India, Haryana, INDIA

CURRENT POSTDOCTORAL ASSOCIATES

- Oct 2021 – Present: Sudeesh Krishnamurthy

CURRENT PhD STUDENTS

- Jun 2014 – Present: Divya G (Jointly with Prof. Ajay Sood, Dept. of Physics, IISc)
- Aug 2015 – Present: Manodeep Mondal
- Jun 2016 – Present: Niloyendu Roy
- Jan 2017 – Present: Navneet Singh
- May 2018 – Present: Pragya Arora

CURRENT MS STUDENTS

- Aug 2018 – Present: Mohit Chaudhary
- Sept 2020 – Present: Uttam Tiwari
- Aug 2021 – Present: Subhanshi Mishra

CURRENT PGDMS STUDENTS

- Sept 2021 – Present: Kamlesh Mishra

PhD STUDENTS SUPERVISED

- Aug 2009 – Apr 2015: Dr. Hima Nagamanasa Kandula (*Recipient of the best PhD Thesis Award in Physical Sciences at JNCASR, 2016*)
Presently an Assistant Professor at the University of Massachusetts at Amherst, USA

- Aug 2009 – Oct 2015: Dr. Shreyas Gokhale (*Recipient of the best PhD Thesis Award in Physical Sciences at IISC, 2017*)
Jointly with Prof. Ajay Sood at Indian Institute of Science, Bangalore, INDIA. Presently a Postdoctoral Associate with Prof. Jeff Gore at Massachusetts Institute of Technology, Boston, USA
- Jan 2012 – Jun 2017: Dr. Chandan Mishra (*Recipient of the best PhD Thesis Award in Physical Sciences at JNCASR, 2017*).
Presently an Assistant Professor at the Indian Institute of Technology, Gandhinagar, INDIA

MS STUDENTS SUPERVISED

- Jan 2012 – May 2013: Mr. Chandan K Mishra (*recipient of the best MS Thesis Award*)
- Aug 2012 – May 2014: Ms. Neelima Kandula
- Aug 2015 – May 2017: Ms. Srimayee Mukherji

RESEARCH ASSISTANTS SUPERVISED

- Oct 2009 – Jun 2010: Ms. Mamta Raju Jotkar
- Jun 2011 – Jan 2013: Ms. Shrishti Arora

SUMMER RESEARCH FELLOWS SUPERVISED

- May 2010 – Jun 2010: Ms. Amritha Rangarajan
- May 2010 – Jun 2010: Mr. N Rakul
- May 2011 – Aug 2011: Mr. Krishnand Mallayya
- May 2011 – Jun 2011: Ms. Jyothi Sharma
- Oct 2013 – Feb 2014: Mr. Pavan K Kaushik
- May 2014 – Jul 2014: Ms. Riya Samanta
- Nov 2014 – Jan 2015: Ms. R M Aishwarya
- May 2016 – Jul 2016: Ms. Shaniba Thottoli
- May 2016 – Jul 2016: Mr. Aashish Agarwal
- May 2017 – Jul 2017: Mr. Nathan Leroux
- May 2017 – Jul 2017: Mr. Yash Rana

ACADEMIC REFERENCES

- Prof. Itai Cohen
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- Prof. Ajay K. Sood (FRS)
Department of Physics
Indian Institute of Science
Bangalore 560012, India
Ph: +91 80 22932964
Email: asood@physics.iisc.ernet.in

- Prof. Sriram Ramaswamy (FRS)
Department of Physics
Indian Institute of Science
Bangalore 560012, India
Ph: +91 80 22932698
Email: sriram@physics.iisc.ernet.in