

Angshuman Nag, PhD

Professor, Department of Chemistry,
Indian Institute of Science Education and Research (IISER)
Pune, Maharashtra 411008, India.

Fellow of Indian Academy of Sciences, Bengaluru
Associate Editor *JACS Au*

Email: angshuman@iiserpune.ac.in, Telephone: +91 20 25904117
Web: <http://angshumaniiserpune.wixsite.com/grouppage>

**PERSONAL PARTICULARS**

Nationality: Indian Date of birth: 5th October, 1980 Married

PROFESSIONAL PREPARATION

2010 – 2012 Postdoctoral Fellow. Department of Chemistry, University of Chicago, Chicago, IL 60637, USA.
2009 – 2010 Centenary Postdoctoral Fellow. Indian Institute of Science, Bangalore, India.
2004 – 2009 PhD. Indian Institute of Science, Bangalore, India.
2001 – 2003 Master of Science (Chemistry). Indian Institute of Technology (IIT), Guwahati, India.
1998 – 2001 Bachelor of Science (Chemistry Major). Assam University Silchar, India.

APPOINTMENTS

February 2024 onward: Professor, Department of Chemistry, IISER Pune, India.
2019 – 2024 Associate Professor, Department of Chemistry, IISER Pune, India.
2015 – 2019 Assistant Professor, Department of Chemistry, IISER Pune, India.
2012 – 2017 DST Ramanujan Fellow, Department of Chemistry, IISER Pune, India.

PROFESSIONAL RECOGNITION/ AWARD/ FELLOWSHIP

Sr. No.	Name of Recognition/Award/Fellowship	Awarding Agency	Year
1	Associate Editor	JACS Au	2026
	Fellow	Indian Academy of Sciences, Bengaluru	2025
2	The Distinguished Lectureship Award	The Chemical Society of Japan, Asian International Symposium.	2025
3	National Prize for Chemical Physics Research	C. N. R. Rao Education Foundation	2024
4	Certificate of Appreciation for Exemplary Contributions to Teaching	IISER Pune	2023
5	India Research Excellence - Citation Awards in Natural Sciences	Clarivate (Web of Science)	2023
6	Silver Medal	Society for Materials Chemistry (SMC), BARC Mumbai	2022
7	Editorial Advisory Board Member	ChemNanoMat	2022
8	Editorial Advisory Board Member	ChemistrySelect	2021
9	Swarnajayanti Fellowship	Department of Science and Technology, Govt. of India	2020
10	Editorial Advisory Board Member	Nano Letters	2020
11	MRSI Medal	Materials Research Society of India (MRSI)	2020
12	Editorial Advisory Board Member	Chemistry of Materials	2019
13	Young Scientist Platinum Jubilee Award	National Academy of Sciences India (NASI), Allahabad	2014
14	Associate	Indian Academy of Sciences (IAS) Bangalore	2014

SUPERVISION OF STUDENTS AND POSTDOCTORAL FELLOWS

2012 – present: PhD: 15 completed + 7 ongoing; Master thesis: 12 completed + 2 ongoing;

Postdoctoral Fellow: 14 completed + 1 ongoing; Project students: 4 completed.

TEACHING ACTIVITIES

2012 – present: Teaching undergraduate and PhD level courses in IISER Pune. Subjects taught are: Principles of Physical Chemistry; Solid State Chemistry; Physical Chemistry of Solutions; Chemistry for Alternative Energy; Advanced Physical Chemistry Lab; Advanced Inorganic Chemistry Lab. Designed a new course: Chemistry for Alternative Energy.

NATIONAL-LEVEL COMMITTEE ACTIVITIES

2024–2026: Member of the Expert Advisory committee on "Advanced Materials" formed by the Department of Science and Technology, Government of India.

2022–2025: Co-opted Member of the Expert Committee – Chemical Sciences for "Start-up Research Grant" and "National Postdoctoral Fellowship (NPDF)" formed by SERB, Department of Science and Technology, Government of India.

2025 : Member of the Standing Review Committee of Indian Beamline at Photon Factory, KEK, Tsukuba, Phase III, formed by the Department of Science and Technology, Government of India.

2024-2025 : Member of the Review Committee of Indian Projects submitted to DESY Beamline, formed by the Department of Science and Technology, Government of India.

2023: Subject Coordinator (Materials Chemistry) for the "Prime Minister's Research Fellowship (PMRF) " conferred to PhD students.

2022: Vice-chair of the Joint Admissions Committee (JAC) overseeing the nationwide IISER Aptitude Test and Admissions for all IISERs. Served as a JAC member in both 2021 and 2022.

EXTERNAL PROJECT GRANTS (completed as PI)

- Chiral Hybrid Perovskite Semiconductor
- Lanthanide Doping in Perovskite Semiconductors: visible to infrared electroluminescence
- Low-dimensional metal halides with broadband emission and their application in light-emitting diode
- Pb-Free Metal Halide Perovskite Nanocrystals for Optoelectronic Applications
- Doped Semiconductor Nanocrystals for Plasmonic and Electron Spin-Based Applications: Synthesis, Thin Film, and Spectroscopy
- Ramanujan Fellowship

INVITED LECTURES

2013-26: ~100 invited talks in India, USA, Germany, France, Italy, China, Spain and Korea

PUBLICATION METRICS

Number of publications: 137 Total Citations: 18,785 h-index: 69 Average citation per paper: ~137

Source: Google Scholar; Date: 18 April 2026.

LIST OF PATENTS:

1. Molybdenum(III)-Doped Halide Double Perovskite Phosphor Composition and A Process Of Preparing The Same Thereof. [Nag A.](#); Ghosh, A.; Saikia S. Indian Patent Provisional Application (2521097969), **2025**
2. Ultrabroad Near-Infrared Emitting Perovskite Materials. [Nag A.](#); Saikia S. Indian Patent Provisional Application (202421069681), **2024**
3. *Materials and Methods for the Preparation of Nanocomposites.* [Nag A.](#); Talapin D. V. US Patent (9882001), **2018**.

LIST OF PUBLICATIONS (underlining is used to indicate the corresponding author in each case)

(Publications based on the work carried out at IISER Pune)

137. Saikia, S.; Ghosh, A.; Gállico, D. A.; Calado, C. M. S.; Murugesu, M.; Nag, A. Spin-Flip Upconversion Luminescence and Tunable Downshifting Near-Infrared Emissions via 4d-4f Interaction in Doped Halide Perovskite. *Angew. Chem. Int. Ed.* **2026**, e7420770.
136. Saikia, S.; Ghosh, A.; Nag, A. Transition-Metal-Doped Halide Perovskites for Near-Infrared Emissions: Beyond Oxides. *ACS Energy Lett.* **2026**, 11, 3024–3037.
135. Ghosh, A.; Saikia, S.; Mukherjee, S.; Johannesson, E.; Rensmo, H. Nag, A. Intra-Configurational Spin-Flip d-d Transition of Mo (III) Doped Perovskite for Ultra-Narrow Near Infrared-II Emission in Ambient Conditions. *Angew. Chem. Int. Ed.* **2025**, e19144.
134. Makhija, U.; Kushwaha, V.; Prajesh, N.; Nag, A., Boomishankar, R. Piezoelectricity in a mixture of chiral 1D hybrid lead bromide and iodide systems. *J. Mater. Chem. C* **2025**, 13, 23037–23043.
133. Tripathi, V. M.; Saikia, S.; Nag, A. Li(Sc_{0.70}Ga_{0.24}Cr_{0.06})Ge₂O₆ in Polylactic Acid for Robust Near-Infrared Phosphor-Converted Light-Emitting Diode. *Chem. Mater.* **2025**, 37, 7462–7470.
132. Sarma, M.; Mondal, B.; Teotia, Y.; Adarash, K.V.; Nag, A. Defect-Mediated Exciton Storage in Ag–In–Ga–S Nanocrystals. *ACS Energy Lett.* **2025**, 10, 3892–3899.
131. Mondal, B.; Mehta, S.; Mondal, A.; Nag, A. W-Doped Cs₂SnCl₆ for Near-Infrared Emission. *J. Phys. Chem. Lett.* **2025**, 16, 4937–4943.
130. Chaturvedi, A.; Rajput, P. K.; Maqbool, S.; Nag, A., Manda, P. Nonlinear Optical Properties of 0D Chiral Hybrid Bismuthiodides. *Adv. Mater.* **2025**, 37, 2501022
129. Banerjee, S.; Nag, A. High-Temperature Synthesis of Colloidal CH₃NH₃PbBr₃ Perovskite Nanoplatelets and Nanocubes. *Energy Fuels*. **2025**, 39, 11339–11345.
128. Parthiban, P.; Makhija, U.; Pratham, R. Swain, D.; Nag, A. Covalent organic–inorganic layered 2D CdCl₂(n-hexylamine)₂ and not Cd₂S₂(n-hexylamine). *CrystEngComm*. **2025**, 27, 2004–2011.
127. Dutta, T.; Swain, D.; Nag, A. Conformer-Mediated Helical Chirality in 2D Layered Hybrid Perovskites. *Angew. Chem. Int. Ed.* **2025**, e202422550.
126. Joshi, A.; Saikia, S.; Badola, S.; Nag, A.; Saha, S. Defect-mediated electron-phonon coupling in halide double perovskite. *App. Phys. Lett.* **2025** (accepted).
125. Ghosh, A.; Saikia, S.; Molokeev, M. S.; Nag, A. Synthesis and Optical Properties of Organic-Inorganic Hybrid [(18-Crown-6)K][MoOCl₄(H₂O)]. *Chem. Asian J.* **2025**, 20, e202401052.
124. Saikia, S.; Gopal, A.; Rathod, R.; Joshi, A.; Priolkar, K. R.; Saha, S.; Santra, P. K.; Shanmuganathan, K.; Nag, A. Ultrabroad Near Infrared Emitting Perovskites. *Angew. Chem. Int. Ed.* **2025**, e202415003.
123. Rajput, P. K.; Salunkhe, P.; Sarma, M.; Basu, M.; Gopal, A.; Joshi, A.; Shingote, A. S.; Saha, S.; Rahman, A.; Nag, A. Entropy-Driven Reversible Melting and Recrystallization of Layered Hybrid Perovskites. *Small* **2024**, 2406735.
122. Poonia, A. K.; Salunkhe, P.; Nag, A., Adarsh, K. V. Emerging Collective Quantum Phenomena of Excitons in Metal-Halide Perovskites. *MRS Bulletin*. **2024**, 49, 862.
121. Shingote, A. S.; Dutta, T.; Rajput, P. R.; Nag, A. Thermal Evolution of the Structure and Luminescence of the Hybrid-Cation-Stabilized [(4AMTP)PbBr₂]₂PbBr₄ Layered Perovskite. *Chem. Matter.* **2024**, 36, 5277.
120. Chen et al. Roadmap on Perovskite Light-Emitting Diodes. *J. Phys. Photonics* **2024**, 6, 032501.
119. Banerjee, S.; Saikia, S.; Molokeev, M. S.; Nag, A. Unveiling Temperature-Induced Structural Phase Transition and Luminescence in Mn²⁺-Doped Cs₂NaBiCl₆ Double Perovskite. *Chem. Matter.* **2024**, 36, 4750.
118. Mondal, B.; Shinde, A.; Rajput, P. K.; Arfin, H.; Tanwar, R.; Ghosh, P.; Nag, A. Vibronically Coupled Near-Infrared Emission and Excitation from d–d Transitions of Cs₂MX₆ (M = Mo/W, X = Cl/Br). *ACS Energy Lett.* **2024**, 9, 819.
117. Poonia, A. K.; Mondal, B.; Beard, M. C.; Nag, A., Adarsh K. V. Superfluorescence from Electron-Hole Plasma at Moderate Temperatures of 175 K. *Phys. Rev. Lett.* **2024**, 132, 063803.

116. Makhija, U.; Rajput, P. K.; Parthiban, P.; [Nag, A.](#) Effect of film morphology on circular dichroism of low-dimensional chiral hybrid perovskites. *J. Chem. Phys.* **2024**, *160*, 021102.
115. [Arfin, H.](#); Rathod, R.; Sundarnath, S. A.; Priolkar, K. R.; Santra P. K.; [Nag, A.](#) Short Wave Infrared Emissions from $\text{Te}^{4+}\text{-Ln}^{3+}$ (Ln: Er, Yb) Codoped $\text{Cs}_2\text{NaInCl}_6$ Double Perovskites. *Chem. Mater.* **2023**, *35*, 7133–7143.
114. [Shinde, A.](#); Rajput, P. K.; Makhija, U.; Tanwar, R.; Mandal, P.; [Nag, A.](#) Emissive Dark Excitons in Monoclinic Two-Dimensional Hybrid Lead Iodide Perovskites. *Nano Lett.* **2023**, *23*, 15, 6985–6993.
113. Saikia, S.; Ghosh, A.; [Nag, A.](#) Broad Dual Emission by Codoping Cr^{3+} (d→d) and Bi^{3+} (s→p) in $\text{Cs}_2\text{Ag}_{0.6}\text{Na}_{0.4}\text{InCl}_6$ Double Perovskite. *Angew. Chem. Int. Ed.* **2023**, e202307689.
112. Poonia, A. K.; Yadav, P.; Mondal, B.; Mandal, D.; Taank, P.; Shrivastava, M.; [Nag, A.](#); Agarwal, A.; Adarsh, K. V. Room Temperature Electron-hole Condensation in Direct Bandgap Semiconductor Nanocrystals. *Phys. Rev. Applied* **2023**, *20*, L021002.
111. [Chakraborty, R.](#); Rajput, P. K.; Anilkumar, G. M.; Maqbool, S.; Das, R.; Rahman, A.; Mandal, P.; [Nag, A.](#) Rational Design of Non-Centrosymmetric Hybrid Halide Perovskites. *J. Am. Chem. Soc.* **2023**, *145*, 1378–1388.
110. Sheikh, T.; Anilkumar, G. M.; Das, T.; Rahman, A.; [Chakraborty, S.](#); [Nag, A.](#) Combining π -Conjugation and Cation- π Interaction for Water-Stable and Photoconductive One-Dimensional Hybrid Lead Bromide. *J. Phys. Chem. Lett.* **2023**, *14*, 1870–1876.
109. [Gabbani, A.](#); Sangregorio, C.; Tandon, B.; [Nag, A.](#); Gurioli, M.; Pineider, F. Magnetoplasmonics beyond Metals: Ultrahigh Sensing Performance in Transparent Conductive Oxide Nanocrystals. *Nano Lett.* **2022**, *22*, 9036–9044.
108. Dutta, T.; Kashid, S. M.; Hooda, R.; Sheikh, T.; Chowdhury, A.; [Nag, A.](#) Edge versus Interior Mn^{2+} Doping in 2D Layered Butylammonium Lead Bromide Perovskite Single Crystals. *J. Phys. Chem. C* **2022**, *126*, 21109–21116.
107. Sheikh, T.; Maqbool, S.; Rajput, P. K.; Mandal, P.; [Nag, A.](#) Effect of chirality on the optical properties of layered hybrid perovskite R- and S- α -methylbenzylammonium lead iodide. *Chemical Commun.* **2022**, *58*, 7650–7653.
106. Rajput, P. K.; Poonia, A. K.; Mukherjee, S.; Sheikh, T.; Shrivastava, M.; Adarsh, K. V.; [Nag, A.](#) Chiral Methylbenzylammonium Bismuth Iodide with Zero-Dimensional Perovskite Derivative Structure. *J. Phys. Chem. C* **2022**, *126*, 9889–9897.
105. Panigrahi, K.; [Nag, A.](#) Challenges and Strategies to Design Phosphors for Future White Light Emitting Diodes. *J. Phys. Chem. C* **2022**, *126*, 8553–8564.
104. Saikia, S.; Joshi, A.; Arfin, H.; Badola, S.; Saha, S.; [Nag, A.](#) $\text{Sb}^{3+}\text{-Er}^{3+}$ -Codoped $\text{Cs}_2\text{NaInCl}_6$ for Emitting Blue and Short-Wave Infrared Radiation. *Angew. Chem. Int. Ed.* **2022**, *61*, e202201628.
103. Mondal, B.; Poovathan, A.; Sheikh, T.; [Nag, A.](#) Yb^{3+} -Doped Phenylethylammonium Lead Bromide 2D Layered Hybrid Perovskite for Near Infrared Emission. *ChemNanoMat*, **2022** doi: 10.1002/cnma.202200104
102. [Chakraborty, R.](#); Sheikh, T.; [Nag, A.](#) Iodine–Iodine Interactions Suppressing Phase Transitions of 2D Layered Hybrid $(\text{I}(\text{CH}_2)_n\text{NH}_3)_2\text{PbI}_4$. *Chem. Mater.* **2022**, *34*, 288.
101. [Kshirsagar, A. S.](#); Arfin, H.; Banerjee, S.; Mondal, B. [Nag, A.](#) Colloidal Sb^{3+} -Doped $\text{Cs}_2\text{InCl}_5\cdot\text{H}_2\text{O}$ Perovskite Nanocrystals with Temperature-Dependent Luminescence. *J. Phys. Chem. C* **2021**, *125*, 27671–27677.
100. Poonia, A. K.; Shrivastava, M.; Mir, W. J.; Aneesh, J.; [Nag, A.](#); Adarsh, K. V. Intervalley polaronic biexcitons in metal halide perovskite quantum dots. *Phys. Rev. B* **2021**, *104*, L161407.
99. Maqbool, S.; Sheikh, T.; Thekkayil, Z.; Deswal, S.; Boomishankar, R.; [Nag, A.](#); Mandal, P. Third Harmonic Upconversion and Self-Trapped Excitonic Emission in 1D Pyridinium Lead Iodide. *J. Phys. Chem. C* **2021**, *125*, 22674–22683.
98. [Nag, A.](#) “Plenty of Room” at the Interface of Hybrid Metal Halide Perovskite Single Crystals. *Nano Lett.* **2021**, *21*, 8529.
97. Arfin, H.; [Nag, A.](#) Origin of Luminescence in Sb^{3+} - and Bi^{3+} -Doped Cs_2SnCl_6 Perovskites: Excited State Relaxation and Spin–Orbit Coupling. *J. Phys. Chem. Lett.* **2021**, *12*, 10002.
96. Dutta, T.; Sheikh, T.; [Nag, A.](#) Temperature-Dependent Photoluminescence of Hexafluorobenzene Intercalated Phenethylammonium Tin Iodide 2D Perovskite. *ChemAsianJ.* **2021**, *16*, 2745–2751.

95. Sheikh, T.; Maqbool, S.; Mandal, P.; [Nag, A.](#) Introducing Intermolecular Cation- π Interactions for Water-Stable Low Dimensional Hybrid Lead Halide Perovskites. *Angew. Chem. Int. Ed.* **2021**, *60*, 18265.
94. Chakraborty, R.; Sheikh, T.; Ghosh, P.; [Nag, A.](#) Neural Networks for Analysis of Optical Properties in 2D Layered Hybrid Lead Halide Perovskites. *J. Phys. Chem. C* **2021**, *125*, 5251–5259.
93. Dey, A.; Ye, J.; De, A.; Debroye, E.; Ha, S. K.; Bladt, E.; Kshirsagar, A. S.; Wang, Z.; Yin, J.; Wang, Y.; Quan, L. N.; Yan, F.; Gao, M.; Li, X.; Shamsi, J.; Debnath, T.; Cao, M.; Scheel, M. A.; Kumar, S.; Steele, J. A.; Gerhard, M.; Chouhan, L.; Xu, K.; Wu, X.-g.; Li, Y.; Zhang, Y.; Dutta, A.; Han, C.; Vincon, I.; Rogach, A. L.; [Nag, A.](#); Samanta, A.; Korgel, B. A.; Shih, C.-J.; Gamelin, D. R.; Son, D. H.; Zeng, H.; Zhong, H.; Sun, H.; Demir, H. V.; Scheblykin, I. G.; Mora-Seró, I.; Stolarczyk, J. K.; Zhang, J. Z.; Feldmann, J.; Hofkens, J.; Luther, J. M.; Pérez-Prieto, J.; Li, L.; Manna, L.; Bodnarchuk, M. I.; Kovalenko, M. V.; Roelofs, M. B. J.; Pradhan, N.; Mohammed, O. F.; Bakr, O. M.; Yang, P.; Müller-Buschbaum, P.; Kamat, P. V.; Bao, Q.; Zhang, Q.; Krahne, R.; Galian, R. E.; Stranks, S. D.; Bals, S.; Biju, V.; Tisdale, W. A.; Yan, Y.; [Hoye, R. L. Z.](#); [Polavarapu, L.](#) State of the Art and Prospects for Halide Perovskite Nanocrystals. *ACS Nano* **2021**, *15*, 10775–10981.
92. Liu, Y.; [Nag, A.](#); Manna, L. [Xia, Z.](#) Lead-Free Double Perovskite $\text{Cs}_2\text{AgInCl}_6$. *Angew. Chem. Int. Ed.* **2020**, *021*, 60, 11592–11603.
91. Chakraborty, R.; [Nag, A.](#) Dielectric Confinement for Designing Compositions and Optoelectronic Properties of 2D Layered Hybrid Perovskite. *Phys. Chem. Chem. Phys.* **2021**, *23*, 82–9.
90. Su, B.; Zhou, G.; Huang, J.; Song, E.; [Nag, A.](#); [Xia, Z.](#) Mn^{2+} -Doped Metal Halide Perovskites: Structure, Photoluminescence, and Application. *Laser Photonics Rev.* **2021**, *15*, 2000334.
89. Ravi V. K.; Yu, S. H.; Rajput, P. K.; Nayak, C.; Bhattacharyya, D.; [Chung, D. S.](#); [Nag, A.](#) Colloidal BaZrS_3 Chalcogenide Perovskite Nanocrystals for Thin Film Device Fabrication. *Nanoscale* **2020**, *13*, 1616.
88. Arfin, H.; Kshirsagar, A. S.; Kaur, J.; Mondal, B.; Xia, Z.; [Chakraborty, S.](#); [Nag, A.](#) ns^2 Electron (Bi^{3+} and Sb^{3+}) Doping in Lead-Free Metal Halide Perovskite Derivatives. *Chem. Mater.* **2020**, *32*, 24, 10255–10267.
87. [Ravi, V.](#); Mondal, B.; Nawale, V. V.; [Nag, A.](#) Don't Let the Lead Out: New Material Chemistry Approaches for Sustainable Lead Halide Perovskite Solar Cells. *ACS Omega* **2020**, *5*, 29631–29641.
86. Nawale, V.; [Sheikh, T.](#); [Nag, A.](#) Dual Excitonic Emission in Hybrid 2D Layered Tin Iodide Perovskites. *J. Phys. Chem. C* **2020**, *124*, 21129–21136.
85. Chakraborty, R.; [Nag, A.](#) Correlation of Dielectric Confinement and Excitonic Binding Energy in 2D Layered Hybrid Perovskites using Temperature Dependent Photoluminescence. *J. Phys. Chem. C* **2020**, *124*, 16177–16185.
84. [Ravi, V. K.](#); Saikia, S.; Yadav, S.; Nawale, V.; [Nag, A.](#) $\text{CsPbBr}_3/\text{ZnS}$ Core/Shell Type Nanocrystals for Enhancing Luminescence Lifetime and Water Stability. *ACS Energy Lett.* **2020**, *5*, 1794.
83. Sheikh, T.; Nawale, V.; Pathoor, N.; Phadnis, C.; Chowdhury, A.; [Nag, A.](#) Molecular Intercalation and Electronic Two Dimensionality in Layered Hybrid Perovskites. *Angew. Chem. Int. Ed.* **2020**, *59*, 11653.
82. Arfin, H.; Kaur, J.; Sheikh, T.; [Chakraborty, S.](#); [Nag, A.](#) Bi^{3+} - Er^{3+} and Bi^{3+} - Yb^{3+} Codoped $\text{Cs}_2\text{AgInCl}_6$ Double Perovskite Near Infrared Emitters. *Angew. Chemie Int. Ed.* **2020**, *59*, 11307.
81. [Mir, W. J.](#); Sheikh, T.; Arfin, H.; [Xia, Z.](#); [Nag, A.](#) Lanthanide Doping in Metal Halide Perovskite Nanocrystals: Spectral Shifting, Quantum Cutting and Optoelectronic Applications. *NPG Asia Mater.* **2020**, *12*, 9.
80. [Shanker, G. S.](#); Panchal, R. A.; Ogale, S.; [Nag, A.](#) $\text{g-C}_3\text{N}_4$: Sn - doped In_2O_3 (ITO) Nanocomposite for Photoelectrochemical Reduction of Water using Solar Light. *J. Solid State Chem.* **2020**, *285*, 121187.
79. Amelot, D.; Rastogi, P.; Martinez, B.; Greboval, C.; Livache, C.; Bresciani, F. A.; Qu, J.; Chu, A.; Goyal, M.; Chee, S.-S.; Casaretto, N.; Xu, X.; Méthivier, C.; Cruguel, H.; Ouerghi, A. [Nag, A.](#); Silly, M. G.; Witkowski, N.; [Lhuillier, E.](#) Revealing the Band Structure of FAPI Quantum Dot Film and Its Interfaces with Electron and Hole Transport Layer Using Time Resolved Photoemission. *J. Phys. Chem. C* **2020**, *124*, 6, 3873.
78. [Sheikh, T.](#); Shinde, A.; Mahamuni, S.; [Nag, A.](#) Dual Excitonic Emissions and Structural Phase Transition of Octylammonium Lead Iodide 2D Layered Perovskite Single Crystal. *Mater. Res. Exp.* **2019**, *6*, 124002.
77. Kshirsagar, A. S.; [Nag, A.](#) Synthesis and Optical Properties of Colloidal $\text{Cs}_2\text{AgSb}_{1-x}\text{Bi}_x\text{Cl}_6$ Double Perovskite Nanocrystals. *J. Chem. Phys.* **2019**, *151*, 161101.

76. Mahor, Y.; Mir, W.; [Nag, A.](#) Synthesis and Near Infrared Emission of Yb Doped Cs₂AgInCl₆ Double Perovskite Microcrystals and Nanocrystals. *J. Phys. Chem. C* **2019**, 123, 15787.
75. Chakraborty, R.; Sim, K. M.; Shrivastava, M.; Adarsh, K. V.; Chung, D. S.; [Nag, A.](#) Colloidal Synthesis, Optical Properties and Hole Transport Layer Applications of Cu₂BaSnS₄ (CBTS) Nanocrystals. *ACS Appl. Energy Mater.* **2019**, 2, 5, 3049.
74. Sheikh, T.; [Nag, A.](#) Mn Doping in Centimeter Sized Layered 2D Butylammonium Lead Bromide (BA₂PbBr₄) Single Crystals and Their Optical Properties. *J. Phys. Chem. C* **2019**, 123, 9420.
73. Mir, W. J.; Swarnkar, A.; [Nag, A.](#) Postsynthesis Mn-Doping in CsPbI₃ Nanocrystals to Stabilize the Black Perovskite Phase. *Nanoscale* **2019**, 11, 4278.
72. [Swarnkar, A.](#); Mir, W. J.; Chakraborty, R.; Jagadeeswararao, M.; Sheikh, T.; [Nag, A.](#) Are Chalcogenide Perovskite an Emerging Class of Semiconductors for Optoelectronic Properties and Solar Cell? *Chem. Mater.* **2019**, 31, 265.
71. Sheikh, T.; Shinde, S.; Mahamuni, S.; [Nag, A.](#) Possible Dual Bandgap in (C₄H₉NH₃)₂PbI₄ Layered Perovskite: Single Crystal and Exfoliated Few-Layer. *ACS Energy Lett.* **2018**, 3, 2940.
70. [Mir, W. J.](#); Mahor, Y.; Lohar, A.; Jagadeeswararao, M.; Das, S.; Mahamuni, S.; [Nag, A.](#) Post-Synthesis Doping of Mn and Yb into CsPbX₃ (X=Cl, Br, I) Perovskite Nanocrystals for Downconversion Emission. *Chem. Mater.* **2018**, 30, 8170.
69. Shanker, G. S.; Bhosale, R.; [Ogale, S.](#); [Nag, A.](#) 2D nanocomposite of g-C₃N₄ and TiN Embedded N-Doped Graphene for Photoelectrochemical Reduction of Water using Sunlight. *Adv. Mater. Interface.* **2018**, 5, 1801488.
68. Mondal, A.; Aneesh, J.; Ravi, V. K.; Sharma, R.; Mir, W. J.; Beard, M. C.; [Nag, A.](#); [Adarsh, K. V.](#) Ultrafast exciton many-body interactions and hot-phonon bottleneck in colloidal cesium lead halide perovskite nanocrystals. *Phys. Rev. B* **2018**, 98, 115418.
67. Ravi, V. K.; Singhal, N.; [Nag, A.](#) Initiation and future prospects of colloidal metal halide double-perovskite nanocrystals: Cs₂AgBiX₆ (X= Cl, Br, I). *J. Mat. Chem. A* **2018**, 6, 21666.
66. [Singhal, N.](#); Chakraborty, R.; Ghosh, P.; [Nag, A.](#) Low-Bandgap Cs₄CuSbCl₁₂ layered Double Perovskite: Synthesis, Reversible Thermal Changes and Magnetic Interaction. *Chem.-Asian J.* **2018**, 13, 2085.
65. Nanda, N. K.; [Nag, A.](#) Synthesis and Luminescence of Mn-Doped Cs₂AgInCl₆ Double Perovskite. *Chem. Commun.* **2018**, 54, 5205.
64. [Pal, J.](#); Bhunia, A.; Chakraborty, S.; Manna, S.; Das, S.; Diwan, A.; [Datta, S.](#); [Nag, A.](#) Synthesis and Optical Properties of Colloidal M₃Bi₂I₉ (M = Cs, Rb) Perovskite Nanocrystals. *J. Phys. Chem. C* **2018**, 122, 10643.
63. Ravi, V. K.; Scheidt, R. A.; [Nag, A.](#); Kuno, M.; [Kamat, P. V.](#) To Exchange or Not to Exchange. Suppressing Anion Exchange in Cesium Lead Halide Perovskites with PbSO₄-Oleate Capping. *ACS Energy Lett.* **2018**, 3, 1049.
62. Kumawat, N. K.; Swarnkar, A.; [Nag, A.](#); [Kabra, D.](#) Ligand Engineering to Improve the Luminance Efficiency of CsPbBr₃ Nanocrystal Based Light Emitting Diodes. *J. Phys. Chem. C* **2018**, 122, 13767.
61. Mir, W. J.; Livache, C.; Goubet, N.; Martinez, B.; Jagtap, A.; Chu, A.; Coutard, N.; Cruguel, H.; Barisien, T.; Ithurria, S.; [Nag, A.](#); Dubertret, B.; Ouerghi, A.; Silly, M. G.; [Lhuillier, E.](#) Strategy to Overcome Recombination Limited Photocurrent Generation in CsPbX₃ Nanocrystal Arrays. *Appl. Phys. Lett.* **2018**, 112, 113503.
60. [Swarnkar, A.](#); [Mir, W. J.](#); [Nag, A.](#) Can B-Site Doping or Alloying Improve Thermal- and Phase-Stability of All-Inorganic CsPbX₃ (X = Cl, Br, I) Perovskites? *ACS Energy Lett.* **2018**, 3, 286.
59. Haque, A.; Ravi, V. K.; Shanker, G. S.; Sarkar, I.; [Nag, A.](#); [Santra, P. K.](#) Internal Heterostructure of Anion-Exchanged Cesium Lead Halide Nanocubes. *J. Phys. Chem. C* **2018**, 122, 10643.
58. Sim, K. M.; Swarnkar, A.; [Nag, A.](#); [Chung, D. S.](#) Phase Stabilized α-CsPbI₃ Perovskite Nanocrystals for Photodiode Applications. *Laser and Photonics Rev.* **2018**, 1700209.
57. Tandon, B.; Yadav, A.; Khurana, D.; Reddy, P.; Santra, P. K.; [Nag, A.](#) Size-Induced Enhancement of Carrier Density, LSPR Quality Factor, and Carrier Mobility in Cr-Sn Doped In₂O₃ Nanocrystals. *Chem. Mater.* **2017**, 29, 9360.
56. Ravi, V. K.; [Santra, P. K.](#); Joshi, N.; Chugh, J.; Singh, S. K.; Rensmo, H.; [Ghosh, P.](#); [Nag, A.](#) Origin of the Substitution Mechanism for the Binding of Organic Ligands on the Surface of CsPbBr₃ Perovskite Nanocubes. *J. Phys. Chem. Lett.* **2017**, 8, 4988.

55. Pal, J.; Manna, S.; Mondal, A.; Das, S.; Adarsh, K. V.; Nag, A. Colloidal Synthesis and Photophysics of $M_3Sb_2I_9$ (M = Cs and Rb) Nanocrystals: Lead-Free Perovskites. *Angew Chem. Int. Ed.* **2017**, *56*, 14187.
54. Shanker, G. S.; Markad, G. B.; Jagadeeswararao, M.; Bansode, U.; Nag, A. Colloidal Nanocomposite of TiN and N-Doped Few-Layer Graphene for Plasmonics and Electrocatalysis. *ACS Energy Lett.* **2017**, *2*, 2251.
53. Sarkar, S.; Ravi, V. K.; Banerjee, S.; Yettapu, G. R.; Markad, G. B.; Nag, A.; Mandal, P. Terahertz Spectroscopic Probe of Hot Electron and Hole Transfer from Colloidal CsPbBr₃ Perovskite Nanocrystals. *Nano Lett.* **2017**, *17*, 5402.
52. Mir, W. J.; Warankar, A.; Acharya, A.; Mandal, P.; Nag, A. Colloidal Thallium Halide Nanocrystals with Reasonable Luminescence, Carrier Mobility and Diffusion Length. *Chem. Sci.* **2017**, *8*, 4602.
51. Swarnkar, A.; Ravi, V. K.; Nag, A. Beyond Colloidal Cesium Lead Halide Perovskite Nanocrystals: Analogous Metal Halides and Doping. *ACS Energy Lett.* **2017**, *2*, 1089.
50. Aneesh, J.; Swarnkar, A.; Ravi, V. K.; Sharma, R.; Nag, A.; Adarsh K. V. Ultrafast Exciton Dynamics in Colloidal CsPbBr₃ Perovskite Nanocrystals: Biexciton Effect and Auger Recombination. *J. Phys. Chem. C* **2017**, *121*, 4734.
49. Mir, W. J.; Jagadeeswararao, M.; Das, S.; Nag, A. Colloidal Mn-Doped Cesium Lead Halide Perovskite Nanoplatelets. *ACS Energy Lett.* **2017**, *2*, 537.
48. Pradhan, N.; Adhikari, S. D.; Nag, A.; Sarma, D. D. Luminescence, Plasmonic and Magnetic Properties of Doped Semiconductor Nanocrystals: Current Developments and Future Prospects. *Angew. Chem. Int. Ed.* **2017**, *56*, 7038.
47. Ravi, V. K.; Markad, G. B.; Nag, A. Band Edge Energies and Excitonic Transition Probabilities of Colloidal CsPbX₃ (X = Cl, Br, I) Perovskite Nanocrystals. *ACS Energy Lett.* **2016**, *1*, 665.
46. Yadav, A.; Tandon, B.; Nag, A. Reduction of Mn³⁺ to Mn²⁺ and Near Infrared Plasmonics from Mn-Sn codoped In₂O₃ Nanocrystals. *RSC Adv.* **2016**, *6*, 79153.
45. Jagdeeswararao, M.; Swarnkar, A.; Markad, G. B.; Nag, A. Defect-Mediated Electron-Hole Separation in Colloidal Ag₂S-AgInS₂ Hetero Dimer Nanocrystals Tailoring Luminescence and Solar Cell Properties. *J. Phys. Chem. C* **2016**, *120*, 19461.
44. Yettapu, G. R.; Talukdar, D.; Sarkar, S.; Swarnkar, A.; Nag, A.; Ghosh, P.; Mandal, P.; THz conductivity within colloidal CsPbBr₃ perovskite nanocrystals: remarkably high carrier mobilities and large diffusion lengths. *Nano Lett.* **2016**, *16*, 4838.
43. Ravi, V. K.; Swarnkar, A.; Chakraborty, R.; Nag, A. Excellent green but less impressive blue luminescence from CsPbBr₃ perovskite nanocubes and nanoplatelets. *Nanotechnology* **2016**, *27*, 325708.
42. Tandon, B.; Yadav, A.; Nag, A. Delocalized Electrons Mediated Magnetic Coupling in Mn-Sn codoped In₂O₃ Nanocrystals: Plasmonics shows the way. *Chem. Mater.* **2016**, *28*, 3620.
41. Jagadeeswararao, M.; Pal, S.; Nag, A.; Sarma, D. D. Electrical and Plasmonic Properties of Ligand-Free Sn⁴⁺-Doped In₂O₃ (ITO) Nanocrystals. *ChemPhysChem* **2016**, *17*, 710.
40. Swarnkar, A.; Chulliyil, R.; Ravi, V. K.; Irfanullah, M.; Chowdhury, A.; Nag, A. Colloidal CsPbBr₃ Perovskite Nanocrystals: Luminescence beyond Traditional Quantum Dots. *Angew. Chem. Int. Ed.* **2015**, *54*, 15424.
39. Mir, W. J.; Swarnkar, A.; Sharma, R.; Katti, A.; Adarsh, K. V.; Nag, A. Origin of Unusual Excitonic Absorption and Emission from Colloidal Ag₂S Nanocrystals: Ultrafast Photophysics and Solar Cell. *J. Phys. Chem. Lett.* **2015**, *6*, 3915.
38. Tandon, B.; Ashok, A.; Nag, A. Colloidal Transparent Conducting Oxide Nanocrystals: a new infrared plasmonic material. *Pramana* **2015**, *84*, 1087.
37. Shanker, G. S.; Swarnkar, A.; Chatterjee, A.; Chakraborty, S.; Phukan, M.; Parveen, N.; Biswas, K.; Nag, A. Electronic Grade and Flexible Semiconductor Film Employing Oriented Attachment of Colloidal Ligand-Free PbS and PbSe Nanocrystals at Room Temperature. *Nanoscale* **2015**, *7*, 9204.
36. Jagadeeswararao, M.; Dey, S.; Nag, A.; Rao, C. N. R. Visible light-induced hydrogen generation using colloidal (ZnS)_{0.4}(AgInS₂)_{0.6} nanocrystals capped by S²⁻ ions. *J. Mater. Chem. A*, **2015**, *3*, 8276.
35. Shanker, G. S.; Tandon, B.; Shibata, T.; Chattopadhyay, S.; Nag, A. Doping Controls Plasmonics, Electrical Conductivity, and Carrier-Mediated Magnetic Coupling in Fe and Sn Codoped In₂O₃ Nanocrystals: Local Structure is the Key. *Chem. Mater.* **2015**, *27*, 892.

34. Nag, A.; Zhang, H.; Janke, E.; Talapin, D. V. Inorganic Surface Ligands for Colloidal Nanomaterials. *Z. Phys. Chem.* **2014**, *229*, 85.
33. Tandon, B.; Shanker, G. S.; Nag, A. Multifunctional Sn- and Fe-Codoped In_2O_3 Colloidal Nanocrystals: Plasmonics and Magnetism. *J. Phys. Chem. Lett.* **2014**, *5*, 2306.
32. Nag, A.; Kundu, J.; Hazarika, A. Seeded-Growth, Nanocrystal-Fusion, Ion-Exchange and Inorganic-Ligand Mediated Formation of Semiconductor Based Colloidal Heterostructured Nanocrystals. *CrystEngComm* **2014**, *16*, 9391.
31. Swarnkar, A.; Shanker, G. S.; Nag, A. Organic-Free Colloidal Semiconductor Nanocrystals as Luminescent Sensors for Metal Ions and Nitroaromatic Explosives. *Chem Commun* **2014**, *50*, 4743.
30. Kadlag, K. P.; Patil, P.; Rao, M. J.; Datta, S. Nag, A. Luminescence and Solar Cell from Ligand-Free Colloidal AgInS_2 Nanocrystals. *CrystEngComm* **2014**, *16*, 3605.
29. Rao, M. J.; Shibata, T.; Chattopadhyay, S.; Nag, A. Origin of Photoluminescence and XAFS Study of $(\text{ZnS})_{1-x}(\text{AgInS}_2)_x$ Nanocrystals. *J. Phys. Chem. Lett.* **2014**, *5*, 167.
28. Kadlag, K. P.; Rao, M. J.; Nag, A. Ligand-Free, Colloidal, and Luminescent Metal Sulfide Nanocrystals. *J. Phys. Chem. Lett.* **2013**, *4*, 1676.

(Publications based on the work done before joining IISER Pune)

27. Mukherjee, S.; Nag, A.; Kocovski, V.; Santra, P. K.; Balasubramanian, M.; Chattopadhyay, S.; Shibata, T.; Schaefer, F.; Rusz, J.; Gerard, C.; Eriksson, O.; Segre, C. U.; Sarma, D. D. A microscopic description of the evolution of the local structure and an evaluation of the chemical pressure concept in a solid solution. *Phys. Rev. B* **2014**, *89*, 224105.
26. Nag, A.; Chung, D. S.; Dolzhenkov, D. S.; Dimitrijevic, N. M.; Chattopadhyay, S.; Shibata, T.; Talapin D. V. Effect of Metal Ions on Photoluminescence, Charge Transport, Magnetic and Catalytic Properties of All-Inorganic Colloidal Nanocrystals and Nanocrystal Solids. *J. Am. Chem. Soc.* **2012**, *134*, 13604.
25. Chung, D. S.; Lee, J.-S.; Huang, J.; Nag, A.; Ithirria, S.; Talapin, D. V. Low voltage, Hysteresis Free and High Mobility Transistors from All-Inorganic Colloidal Nanocrystals. *Nano Lett.* **2012**, *12*, 1813.
24. Nag, A.; Kovalenko, M. V.; Lee, J.-S.; Liu, W.; Spokoyny, B.; Talapin, D. V. Metal-Free Inorganic Ligands for Colloidal Nanocrystals: S^{2-} , HS^- , Se^{2-} , HSe^- , Te^{2-} , HTe^- , TeS_3^{2-} , OH^- and NH_2^- as Surface Ligands. *J. Am. Chem. Soc.* **2011**, *133*, 10612.
23. Dey, S.; Das, B.; Voggu, R.; Nag, A.; Sarma, D. D.; Rao, C. N. R. Interaction of CdSe and ZnO nanocrystals with electron-donor and -acceptor molecules. *Chem. Phys. Lett.* **2013**, *556*, 200.
22. Sarma, D. D.; Santra, P. K.; Mukherjee, S.; Nag, A. X-ray Photoelectron Spectroscopy: A Unique Tool to Determine the Internal Heterostructure of nanoparticles. *Chem. Mater.* **2013**, 1222.
21. Kumar, S.; Kamaraju, N.; Vasu, K. S.; Nag, A.; Sood, A. K.; Rao, C. N. R. Graphene Analogue BCN: Femtosecond Nonlinear Optical Susceptibility and Hot Carrier Dynamics. *Chem. Phys. Lett.* **2010**, *499*, 152.
20. Raidongia, K.; Nag, A.; Sundaresan, A.; Rao, C. N. R. Multiferroic and Magnetoelectric Properties of Core-Shell $\text{CoFe}_2\text{O}_4/\text{BaTiO}_3$ Nanocomposites. *Appl. Phys. Lett.* **2010**, *97*, 062904.
19. Subrahmanyam, K. S.; Kumar, P.; Nag, A.; Rao, C. N. R. Blue-Light Emitting Graphene-Based Materials and Their Use in Generating White-Light. *Solid State Commun.* **2010**, *150*, 1774.
18. Nag, A.; Shireen, A. Search for New Transparent Conductors: Effect of Ge Doping on the Conductivity of Ga_2O_3 , In_2O_3 and $\text{Ga}_{1.4}\text{In}_{0.6}\text{O}_3$. *Solid State Commun.* **2010**, *150*, 1679.
17. Rao, C. N. R.; Nag, A. Inorganic analogues of Graphene. *Eur. J. Inorg. Chem.* **2010**, 4244.
16. Nag, A.; Raidongia, K.; Hembram, K. P. S. S.; Waghmare, U. V.; Datta, R.; Rao, C. N. R. Graphene Analogue of BN: Novel Synthesis and Properties. *ACS Nano* **2010**, *4*, 1539.
15. Raidongia, K.; Nag, A.; Hembram, K. P. S. S.; Waghmare, U. V.; Datta, R.; Rao, C. N. R. BCN: A Graphene Analogue with Remarkable Adsorptive Properties. *Chem. Eur. J.* **2010**, *16*, 149.
14. Hazarika, A.; Layek, A.; De, S.; Nag, A.; Debnath, S.; Mahadevan, P.; Chowdhury, A.; Sarma, D. D. Ultranarrow and Widely Tunable Mn^{2+} -Induced Photoluminescence from Single Mn-Doped Nanocrystals of ZnS-CdS Alloys. *Phys. Rev. Lett.* **2013**, *110*, 267401.

13. Shanavas, K. V.; Sharma, S. M.; Dasgupta, I.; Nag, A.; Hazarika, A.; Sarma, D. D. First principles study of the effect of organic ligands in the crystal structure of CdS Nanoparticles. *J. Phys. Chem. C* **2012**, *116*, 6507.
12. Nag, A.; Hazarika, A.; Shanavas, K. V.; Sharma, S. M.; Dasgupta, I.; Sarma, D. D. Crystal Structure Engineering by Fine-Tuning the Surface Energy: The Case of CdE (E = S/Se) Nanocrystals. *J. Phys. Chem. Lett.* **2011**, *2*, 706.
11. Nag, A.; Cherian, R.; Mahadevan, P.; VenuGopal, A.; Hazarika, A.; Mohan, A.; Vengurlekar, A. S.; Sarma, D. D. Size-Dependent Tuning of Mn²⁺ d-Emission in Mn²⁺-Doped CdS Nanocrystals. *J. Phys. Chem. C* **2010**, *114*, 18323.
10. Sarma, D. D.; Nag, A.; Santra, P. K.; Kumar, A.; Sapra, S.; Mahadevan, P. Origin of the Enhanced Photoluminescence from Semiconductor CdSeS Nanocrystals. *J. Phys. Chem. Lett.* **2010**, *1*, 2149.
9. Nag, A.; Sarma, D. D. Solvothermal Synthesis of InP Quantum Dots. *J. Nanosci. Nanotech.* **2009**, *9*, 5633.
8. Nag, A.; Chakraborty, S.; Sarma, D. D. To Dope Mn²⁺ in a Semiconducting Nanocrystal. *J. Am. Chem. Soc.* **2008**, *130*, 10605.
7. Nag, A.; Kumar, A.; Kiran, P. P.; Chakraborty, S.; Kumar, G. R.; Sarma, D. D. Optically Bi-functional Hetero-Structured Nanocrystals. *J. Phys. Chem. C* **2008**, *112*, 8229.
6. Nag, A.; Sapra, S.; Sen Gupta, S.; Prakash, A.; Ghangrekar, A.; Periasamy, N.; Sarma, D. D. Luminescence in Mn Doped CdS Nanocrystals. *Bull. Mater.Sci.* **2008**, *31*, 561.
5. Nag, A.; Sarma, D. D. White Light from Mn²⁺-Doped CdS Nanocrystals: A New Approach. *J. Phys. Chem. C* **2007**, *111*, 13641.
4. Nag, A.; Sapra, S.; Nagamani, C.; Sharma, A.; Pradhan, N.; Bhat, S. V.; Sarma, D. D. A Study of Mn²⁺ Doping in CdS Nanocrystals. *Chem. Mater.* **2007**, *19*, 3252.
3. Nag, A.; Sapra, S.; Chakraborty, S.; Basu, S.; Sarma, D. D. Synthesis of CdSe Nanocrystals in a Noncoordinating Solvent: Effect of Reaction Temperature on Size and Optical Properties. *J. Nanosci. Nanotech.* **2007**, *7*, 1965.
2. Ali, M.; Chattopadhyay, S.; Nag, A.; Kumar, A.; Sapra, S.; Chakraborty, S.; Sarma, D. D. White-Light Emission from a Blend of CdSeS Nanocrystals of Different Se:S Ratio. *Nanotechnology* **2007**, *18*, 075401.
1. Nag, A.; Panda, B.; Chattopadhyay, A. Performing Chemical Reactions in Virtual Capillary of Surface Tension-Confined Microfluidic Devices. *Pramana* **2005**, *65*, 621.