RECIPIENTS OF INSA YOUNG ASSOCIATES (IYA)

(For the year 2024)

1. **Dr Gaurav Ahuja** (24.09.1987), PhD, Associate Professor, Indraprastha Institute of Information Technology, New Delhi.

Dr. Ahuja is a computational biologist who using a variety of approaches including AI/ML to identify alternative functions of cellular metabolites. His group has developed many tools, especially in the areas of olfaction and structure-activity relationships. His collaborative work in identifying human carcinogens using a multiparametric approach is noteworthy.

2. **Dr Mrinmoyee Basu** (17.08.1985), PhD, Assistant Professor, Department of Chemistry, Birla Institute of Technology and Science Pilani, Pilani.

Recommended for her outstanding work on semiconductor, especially on nanomaterials for photoelectrochemical reactions like water splitting, CO2 reduction, and sensing, and vertically grown nanomaterials to enhance light-matter interaction and charge carrier properties.

3. **Dr Sayantani Bhattacharyya** (04.09.1981), PhD, Reader-F, National Institute of Science Education and Research Bhubneswar, Khurda.

Pioneering work on fluid-gravity correspondence.

4. **Dr Pankaj Chauhan** (08.04.1984), PhD, Associate Professor, Department of Chemistry, Indian Institute of Technology Jammu, J&K.

Recommended for his outstanding work in the field of organocatalysis especially on enantioselective reactions, photochemical and electrochemical organic synthesis, synthesis of new polycyclic frameworks, atrop-/enantio-selective synthesis of medium-sized bridged biaryls, generation of remote stereogenic centers, photochemical generation of triplet carbene intermediates, and electro-organic synthesis of valuable building blocks and heterocycles, as well as the merger of chiral organocatalysis with photoredox catalysis and electrochemical synthesis to develop relay catalytic transformations.

5. **Dr Ved Vivek Datar** (13.11.1987), PhD, Assistant Professor, Department of Mathematics, Indian Institute of Science, Bengaluru.

For fundamental contributions to the differential geometry of Kähler manifolds that explore their connections to mathematical physics and complex algebraic geometry.

6. **Dr Sourav Dutta** (05.03.1984), PhD, Reader, Department of Nuclear and Atomic Physics, Tata Institute of Fundamental Research Mumbai, Mumbai.

Outstanding contribution to the understanding of cooling of trapped ions and experiments with strongly coupled atom-cavity systems.

7. **Dr Kalikrishna Hazra** (20.09.1984), PhD, Senior Scientist, Crop Production Division, ICAR-Indian Institute of Pulses Research, Kanpur.

Dr. Hazra developed sustainable phosphorus management modules. He has also carried work on mechanistic comprehension of c-sequestration and strategies for enhanced c-storage.

8. **Dr Neha Jain** (06.09.1981), PhD, Associate Professor, Department of Bioscience and Bioengineering, Indian Institute of Technology, Jodhpur.

Dr Jain has been working on understanding neurodegenerative disease, in particular on understanding the role of microbial amyloids in these diseases, deciphering the role of immune activation by hetero-amyloids and identifying strategies to combat the formation of amyloid.

9. **Dr Md Iqbal Raja Khan** (15.01.1987), PhD, Assistant Professor, Department of Botany, School of Chemical & Life Sciences, Jamia Hamdard, New Delhi.

Dr. Khan has worked on GABA as a new significant plant signaling molecule. They have elucidated its role in mitigating salt and ER stress in wheat plants.

10. **Dr Veda Krishnan** (23.03.1986), PhD, Scientist (Senior scale), Division of Biochemistry, ICAR- Indian Agricultural Research Institute, New Delhi.

Dr. Veda investigated the effect of genetic variability in staple crops like rice and pearl millet on carbohydrate quality and their glycenic potential using various invitro digestion models.

11. **Dr Gaurav Majumdar** (07.08.1984), PhD, Assistant Professor, Department of Zoology, University of Allahabad, Prayagraj.

Dr. Gaurav Majumdar has made significant contributions to the area of chronobiology in avian system. Notable findings include photoperiod impact on peptides in retinas, with which birds can differentiate between summer and winter seasons. Dr. Majumdar studies on neuroplasticity have implication in neurodegenerative diseases.

12. **Dr Surendra Kumar Makineni** (27.06.1986), PhD, Assistant Professor, Department of Materials Engineering, Indian Institute of Science Bangalore, Bengaluru.

For pioneering contribution to the development of lightweight cobalt-base superalloys for high-temperature applications and advanced correlative microscopy techniques to study the atomic-scale structure and composition of defects, grain, and phase boundaries that control the overall properties of engineering alloys.

13. **Dr Awadhesh Narayan** (19.10.1988), PhD, Assistant Professor, Solid State and Structural Chemistry Unit, Indian Institute of Science Bengaluru, Bengaluru.

Recommended for his outstanding work in the field of quantum theory of materials, especially, on predictions of electrically tunable Berry curvature dipole in graphene analogs, discovery of a new two-dimensional structure of WS2 with topological properties and a Berry curvature dipole, development of the theory of high critical temperatures in two-dimensional magnetic materials, demonstration of strain as a control parameter over polar metallicity, innovative approaches to control exceptional points in non-Hermitian quantum systems, machine-learning method for identifying non-Hermitian topological phases, and a new framework to classify exceptional points using techniques from tropical geometry.

14. **Dr Ratna Pal** (04.06.1987), PhD, Assistant Professor, Department of Mathematics, Indian Institute of Science Education and Research Mohali, Mohali.

For contributions to the area of higher dimensional complex dynamics, specially the relation between Hénon maps with bi-holomorphic escaping sets.

15. **Dr Bahni Ray** (26.04.1982), PhD, Associate Professor, Department of Mechanical Engineering, Indian Institute of Technology Delhi, New Delhi.

For her outstanding contributions to understanding micro-scale mechanisms of absorption of hydrophilic and hydrophobic particles through droplets for pollution mitigation.

16. **Dr Sriparna Saha** (19.01.1982), PhD, Associate Professor, Department of Computer Science and Engineering, Indian Institute of Technology Patna, Bihta.

For her significant contributions to multimodal information processing through deep-learning architectures, covering diverse applications, including sentiment and emotion-aware dialogue systems, disease prognosis, hate speech detection, depression detection, recommendation systems, and task-oriented dialogue systems in sales and healthcare domains.

17. **Dr Jogender Singh** (28.03.1988), PhD, Assistant Professor, Indian Institute of Science Education and Research Mohali, Mohali.

Outstanding work unveiling mechanistic underpinnings associated with reductive stress using *C. elegans* as a model system. Discovered the interplay between hyoxia and reductive stress.

18. **Dr Swatantra Pratap Singh** (15.08.1985), PhD, Associate Professor, Environmental Science and Engineering Department, Indian Institute of Technology Bombay, Mumbai.

For his significant contributions to water and wastewater treatment and pollution control research, leading to cost-effective novel membrane technology and environmental nanotechnology-based solutions.

19. **Dr Rishitosh Kumar Sinha** (21.10.1987), PhD, Scientist/Engineer SE, Physical Research Laboratory, Ahmedabad.

Rishitosh Sinha has conducted detailed investigation of the morphology and topography of the landing sites of Chandrayaan-2 and 3. The Chandrayaan-3 Pragyan rover traverse map around the landing site was designed by him.

20. **Dr Surendra Nadh Somala** (20.08.1986), PhD, Associate Professor, Indian Institute of Technology Hyderabad, Sangareddy.

For his significant contributions to earthquake engineering, including seismic hazard assessment and performance assessment of critical infrastructure such as bridges and offshore wind turbines.

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