

Speaker Profile

Ms. Mamata Joshi, Scientific Officer 'E'

NMR Facility, Tata Institute of Fundamental Research, Mumbai, India

Ms. Mamata Joshi has been working in the National Facility for High Field NMR, TIFR, Mumbai for more than 3 decades. This year, the Facility completes 40 years of its existence at TIFR, producing cutting-edge research, on the one hand, and providing excellent service to the NMR community of the country, on the other. She is Facility-in-charge and is primarily responsible for the smooth functioning of the facility which at present has, two high-field state-of-the-art NMR spectrometers: Bruker 800 MHz and Agilent 600 MHz.

Being a pan-India NMR centre, there is waiting list for requisitions from external researchers to book a slot on the instruments. Besides there is vibrant research group in the department of chemical sciences in TIFR, which also utilizes the same machines for their analysis. The NMR spectrometers are capable of delivering spectra of small and simple molecules (1D NMR) within a few seconds as well as those of large biomolecules (aka. proteins & nucleotides, 2D & 3D NMR) taking up to four days for a single experiment!

Besides training TIFR graduate students in NMR operations and analysis, Ms. Mamata interacts and counsels external researchers for proper planning and execution of their experiments to get relevant structure information for their molecular systems. She has given talks on NMR techniques & their applications in several academic Institutes and in NMR workshops & also live tutorials to workshop participants on NMR experiment setup.

She has co-authored about 36 NMR-based publications.

Key Research Areas:

- **NMR-based metabolomics for identification of biomarkers in plants and biological systems.**
- **Multidimensional NMR structure and function studies of bio-active peptides and nucleic acids.**
- **Study of molecular level interaction of potential drug molecules with model lipid membranes using multi-dimensional NMR.**
- **Cell Permeable Ratio-metric Fluorescent Sensors for Detecting Signal Mediating Phospholipids.**