
Registration Seminar

Seminar Title	: Comparative Study of the Fine Micro-architectural Variations in the Wings of Hemipteran Insects
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Supervisor	: Prof. Monalisa Mishra
Venue	: Ls Seminar Room
Date and Time	: 17 Sep 2024 (4.30 PM)
Abstract	: Nature is the treasure trove of many fascinating creatures, and charismatic animals have been found to acquire specific adaptations under changing evolutionary forces. Among all phyla under the kingdom Animalia, phylum Arthropoda has occupied first rank, having the largest population among insects. Insects are glorified invertebrates exhibiting fascinating features like ultrathin corrugated membranous wings, classified under Pterygota. Pterygota are found in terrestrial and aquatic habitats and face multiple hostile environmental challenges. Hence, different parts of their body have undergone modifications for their survival. Among all body parts, the wing cuticle has undergone dramatic adaptations like cryptic colouration, unique nanostructural surface topography, superhydrophobicity, self-cleaning, anti-biofouling, antiadhesive, anti-dragging and antimicrobial properties. All these properties are associated with the roughness of the surface, chemical composition, and nano-sculpture of the wing, which determines the extent of contact-based killing of microbes. Engineers and material scientists can use these features of wing cuticles in multiple fields of applications and to solve various problems. Hence, the wings of insects can be taken as a source of bioinspiration. Hemipteran insects are well adapted to resist adverse conditions, and only a few studies focused on the wing adaptation of Hemiptera. The current research has chosen Hemipteran leafhoppers, planthoppers and spine soldier bugs to check their wing topology. The wing surfaces were visualized under a scanning electron microscope. The wing's chemical composition, contact angle and crystallographic structure were analyzed using FTIR, Drop shape analyzer, XRD and Raman Spectroscopy. Confocal Laser Scanning Microscopy will confirm the bactericidal property of the wing. The current research will entangle the structural variations in the wing topography of the Rice Green Leafhopper, Planthopper and Spine Soldier Bug not described in earlier studies.