## Colloquium

# Exploring spin at hybrid chiral interfaces

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Host: Latha Venkataraman

Driven by the idea of mathematical beauty and aesthetics, the natural sciences tend to focus on systems with high symmetry. However, taking a closer look at nature, we find that broken symmetry especially in the form of chirality is omnipresent in our surroundings. Recently, the importance of chirality for molecular function and, in particular, the chiral-induced spin selectivity (CISS) effect has sparked broad interest in chiral molecules. The remarkably high spin polarization generation efficiency of chiral molecules via the CISS effect promises novel, sustainable hybrid chiral spintronic applications. However, despite intense experimental and theoretical investigations, the microscopic origin of CISS remains debated. While research has predominantly focused on transport properties so far, in our work, we explore spintronic phenomena at hybrid chiral molecule magnetic interfaces. For this, we investigate the interfacial spin-orbit coupling in chiral molecule/metal thin film heterostructures by probing the chirality and spin-dependent spin-to-charge conversion. Our findings validate the central role of spin orbit coupling for the CISS effect, paving the path toward the functionalization of hybrid molecule-metal interfaces via chirality.

**Tuesday, October 21, 2025 11:00am - 12:00pm**
Office Bldg West / Ground floor / Heinzel Seminar Room (I21.EG.101)

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