



Colloquium

Functional Molecular Machines: From Switchable Molecular Tweezers to Cyclodextrin-Based Information Ratchets

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Host: Latha Venkataraman

How can molecular motion be transformed into function? Molecular machines offer unique opportunities to control motion at the molecular scale, yet achieving the complexity and functionality of natural systems remains challenging. This lecture will present our approach to designing molecular machines that convert controlled mechanical motion into function. First, switchable molecular tweezers will be presented as versatile platforms for controlling luminescence, magnetism, catalysis, and even sol-gel transitions. Our work on cyclodextrin-based rotaxanes will also be highlighted, exploiting the cone-shaped structure and selective functionalization of cyclodextrins to achieve unidirectional, active motion through an information-ratchet mechanism.

Thursday, October 22, 2026 10:30am - 12:00pm

Office Bldg West / Ground floor / Heinzl Seminar Room (I21.EG.101)



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