

Synthetic Spin Chemistry for Magnetic Control of Molecular Emission

Seminar

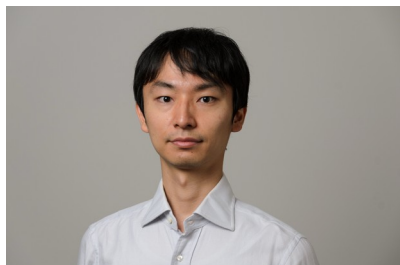
Monday

Nov. 2, 2026

3:00 – 4:00pm

Beaupre Center,

Room 105



Prof. Tomoyasu Mani

**University of
Connecticut**

Photogenerated spin-correlated radical pairs (SCRPs) provide a molecular platform for manipulating spin states, reactivity, and emission under weak magnetic fields. This talk will describe how synthetic design of donor–bridge–acceptor molecules enables magnetic control of excited-state dynamics, producing large room-temperature magnetic field effects on fluorescence intensity and lifetime. I will also discuss how SCRPs can act as molecular magnetic switches in triplet–triplet annihilation upconversion and spin-selective triplet–triplet energy transfer, enabling magnetic control of phosphorescence and NIR lanthanide emission. Together, these results establish a framework for synthetic quantum control of molecular excited states toward optically addressable spin systems and quantum sensors.

Tomoyasu Mani is an Associate Professor of Chemistry at the University of Connecticut. He earned his B.S. in Biochemistry from the University of Texas at Dallas and his Ph.D. in Biochemistry and Molecular Biophysics from the University of Pennsylvania. He conducted postdoctoral research at Brookhaven National Laboratory, where he was a Goldhaber Fellow, before establishing his independent research group at UConn in 2016. His research centers on Synthetic Spin Chemistry, a physical-organic approach to designing molecules with quantum functionality through the control of electron transfer and spin dynamics.