

PHYSICAL CHEMISTRY SEMINAR



Prof. David Waldeck

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Monday, October 3rd, 2022

4:00 PM

Young Hall 4222 Auditorium

Adventures with Chiral Induced Spin Selectivity



Abstract: Since Louis Pasteur, chemists have been fascinated by chirality, however its connection with electron spin was not realized until the 21st century and its implications for chemistry and biochemistry is only beginning to be revealed. I will discuss chiral induced spin selectivity (CISS), which refers to the fact that charge polarization and charge transfer in chiral molecules (and materials) is accompanied by spin polarization and spin transfer. After I introduce some of the seminal works on CISS as background, I will describe some of our recent studies that investigate the implications of CISS in chemistry. I will describe experiments that probe the spin-dependence of electronic interaction with chiral molecules and spin selectivity in electron transfer reactions. In addition, I will show that chiral electrodes can be used to improve the selectivity of electrochemical reactions which involve radical intermediates.