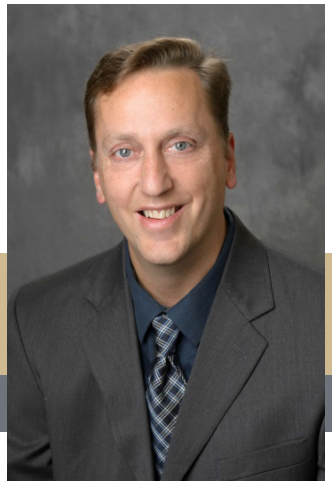
Chemistry Departmental Colloquium

The Twists and Turns of Nonlinear Chiroptics

Dr. Garth J. Simpson

Professor of Chemistry



Abstract:

Molecular chirality is both a fundamental aspect of living systems and a thread woven across our research program. Despite the critical importance of chirality in biology and medicine, spectroscopic methods are typically notoriously insensitive to molecular-handedness. However, nonlinear optical measurements produce chiral-specific observables rivaling their achiral counterparts in magnitude. This extraordinary sensitivity to chirality begs several key questions: i) why does it arise?, ii) how can we best measure it?, and iii) what can be done with it? Our attempts to address these questions have led us on a circuitous research trajectory including theory development, fundamental surface science studies, design of novel chemically-selective microscopy methods, and establishment of new research partnerships with industrial counterparts.

Fundamental studies of chirality (left) led to applications in pharma (middle) and research opportunities across Purdfue's College of Science (right) and beyond.

Thursday, September 4, 2025 **3:30pm** **WTHR 104**

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