

# Colloqui della Classe di Scienze

Anno Accademico 2017/2018

Sala Azzurra | Palazzo della Carovana  
Scuola Normale Superiore  
Piazza dei Cavalieri, 7 - PISA

**31 GENNAIO 2018**  
ore 15.00

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*Optical Rotatory Dispersion:  
New Twists on an Old Topic*

ABSTRACT:

Among the many physicochemical properties that distinguish chiral molecules, perhaps none has had as profound an impact upon chemistry as the characteristic interactions taking place with polarized light – phenomena collectively known as optical activity. Efforts to probe the dispersive (non-resonant) components of such spectral signatures in *isolated* molecules will be presented, with emphasis directed towards the influence that intramolecular (vibrational and conformational) dynamics and intermolecular (environmental) perturbations can exert on the *intrinsic* response. Requisite isolated-molecule measurements have been made possible by our development of cavity ring-down polarimetry (CRDP), an ultrasensitive chiroptical probe that has permitted the first quantitative analyses of optical rotatory dispersion (ORD) to be performed in rarefied (gaseous) media. Comparison of specific-rotation values acquired for rigid and flexible chiral species under complementary isolated and solvated conditions will highlight the coupling that exists among electronic and nuclear degrees of freedom as well as the counterintuitive effects incurred by solute-solvent interactions.



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