## CY-505 Advanced Spectroscopic Techniques

**Common Spectroscopic Techniques**: Theoretical aspects, instrumentation and interpretation of spectra.

**Circular Dichroism (CD) and Optical Rotatory Dispersion (ORD)**: Instrumentation, sampling and applications.

**Mass Spectroscopy**: Instrumentation and sampling, Fragmentation patterns, Ionization techniques, elemental composition from mass spectrum.

**NMR Spectroscopy**: Interpretation of 1H- and 13C-NMR spectra, factors affecting the chemical shifts and coupling constants, recent advances and structure elucidation of organic molecules from 1D and 2D NMR spectroscopy including J-resolved, shift correlated and multiple quantum spectra, inverse measurements, nuclear Overhauser effect and its applications,.

**X- Ray Crystallography**: Principles and applications, crystal structures and classification, two-dimensional patterns, experimental methods, single crystal growth and structure determination, diffractometer, powder methods.

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