

Postdoc position available in the Martin lab at University of California – Irvine

The goal of this NIH-funded project (*NIH grant 2R01EY021514-06*) is to develop and use advanced solid-state NMR methods for the study of complicated protein aggregates. The group has access to an 800 MHz instrument, equipped with solution-state and MAS probes, including a purpose-built crossed-coil $1\text{H}/^{13}\text{C}/2\text{H}/^{15}\text{N}$ MAS probe for these experiments. We also have two dedicated 500 MHz NMR instruments (one solids and one liquids), as well as a fully-equipped molecular biology laboratory for sample preparation. The project supports solid-state NMR methods development and structure determination of wild-type human γS -crystallin in the transparent hydrogel state found in the healthy eye lens, as well as the aggregates formed by UV-light damaged proteins and cataract-related variants. Offering a unique opportunity to explore the interface between liquids and solids techniques, new NMR methodology will be developed to investigate the structural factors related to γS -crystallin stability and solubility. Differential isotope labeling of peptide binders and variant crystallins will be used to identify crystallin residues involved

in altered intermolecular interactions, followed by full structure determination of cataract aggregates. Extensive use will be made of deuterated samples and deuterium NMR in the context of multidimensional NMR experiments. The ideal candidate will be experienced in protein structure determination by MAS and interested in using novel instrumentation to solve biological problems. Other projects in the lab are in biophysical characterization of novel carnivorous plant and psychrophile proteases in an effort to discover a variety of new tools to be used in chemical biology applications.

Requirements: Candidates must have (or be about to earn) a Ph.D. in Chemistry, Physics, or a related discipline, and have experience solving protein structures using MAS NMR. Experience with biological sample prep and/or instrumentation is desirable but not required.

To apply please email rwmartin@uci.edu AND jkelz@uci.edu.

