The Enantiomeric Ratios of Meteoritic Organic Compounds: Their Possible Roles in the Origin of Life

George Cooper

This talk will give an overview of the enantiomer (mirror-image) ratios of organic compounds in meteorites and also describe the results of the present work in my lab. The primary focus will be on sugar derivatives (sugar acids) of carbonaceous meteorites. Our work begins to address questions associated with chirality, i.e., the origins of homochirality. On Earth, biological monomers (amino acids, sugars, etc.) are usually found with one of the enantiomers more abundant than the other. However, biological polymers (proteins, nucleic acids, etc.) are only composed of one enantiomer i.e., they are homochiral. There are hints in meteorites that some organic molecules may also exist in homochiral forms. The talk will address questions such as: did extraterrestrial sources aid in the beginning of this homochirality? Do the increasing size and apparent enantiomer excesses of some meteoritic compounds also extend to larger meteoritic compounds and polymers?