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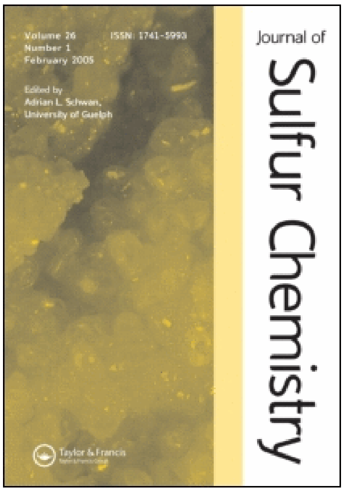

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GUEST EDITORIAL NOTE

This special issue of our journal on *Chalcogeno Heterocumulenes* treats compounds of the general type $X{=}C{=}(C)_n{=}C{=}Y$ where X and Y can be O, NR, S or a lone pair.

Compounds of this type have attracted considerable interest since they were first observed by astrophysicists in interstellar space in the beginning of the eighties by means of microwave spectroscopy. Many of these compounds have since been prepared in the laboratory under special conditions, but most of them are so reactive or unstable that it has not been possible to carry out chemical reactions with them by standard methods. In his review “Sulfur-bearing carbon-chain molecules in space and in the laboratory” S. Saito (Institute for Molecular Science, Okazaki, Japan) treats the present state of interstellar chemistry as well as ion–molecule reactions in space and the spectroscopic problems involving the study of such cumulenes.

These compounds have been prepared in the laboratory by two, principally different, methods. They have been synthesized by flash vacuum pyrolysis in high vacuum and studied in a matrix usually consisting of argon at 10 K by IR or UV–Vis spectroscopy of the matrix or by photolysis of precursors in such matrixes. The matrix isolation method is discussed by G. Maier, H. P. Reisenauer and R. Ruppel (University of Gießen, Germany) in their review “Matrix isolation of chalcogeno heterocumulenes”.

The other principally different way to prepare these compounds is the neutralization of the corresponding cations derived in the mass spectrometer from certain precursors. The neutral compounds thus obtained are further characterized by reionization (NRMS). In this way the stability of compounds in high vacuum on the microsecond time scale can be investigated. This method as well as other mass spectrometric studies involving ion–molecule reactions are treated by

R. Flammang (University of Mons-Hainaut, Belgium) and C. Wentrup (University of Queensland, Brisbane, Australia) in "Mass spectrometry of $S{=}C{=}(C)_n{=}C{=}X$ cumulenes".

Theoretical studies have always played an important role in the study of these compounds, both to explain the variations of stability and reactivity and to predict IR and UV–Vis spectra which have been of great importance for their identification in matrix experiments. R. Janoschek (University of Graz, Austria) reviews this field in his "Theoretical studies of heterocumulated double bond systems", thus updating our knowledge of the geometries, the vibrational wavenumbers and absorption intensities, the rotational constants, the dipole moments, the dissociation energies and the singlet–triplet gaps of these compounds.

The longest known member of this class of compounds is carbon subsulfide C_3S_2, already described by von Lengyel in 1893. It is the only representative of the family of reasonable stability under normal laboratory conditions. Nevertheless, due to the inconvenience of its synthesis, the known chemistry of this compound is rather limited. W. Stadlbauer and T. Kappe (University of Graz, Austria), who are responsible for most modern studies of carbon subsulfide chemistry, let us share their knowledge and experience in their review "The chemistry of carbon subsulfide".

This special issue of *Sulfur Reports* should thus cover the state of the art in the area of chalcogeno heterocumulenes both from a theoretical and an experimental point of view.

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