

"Amino Acid-Derived Organometallics: Applications and Solution Structure"

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My aim is to present a talk that is accessible to all chemists. It contains aspects of organic and organometallic chemistry, and makes use of NMR spectroscopy, mass spectrometry, kinetics and computational methods.

Much progress has been made over the last 15 years in the preparation and use of highly functionalized organozinc reagents, and our contributions have shown how organozinc reagents prepared from proteinogenic amino acids, for example **1**, can be used in the synthesis of a wide variety of unnatural amino acids. Applications include the synthesis of the cyclic peptide OF4949-III, and use of homologous reagents **2** for the synthesis of β -amino acids. Use of dipolar aprotic solvents, specifically dimethylformamide, has proven critical. Recent studies have enhanced our understanding of the structure, stability, reactivity and interactions with the solvent, of a range of highly functionalized organozinc reagents, through combined use of spectroscopic, kinetic and computational methods. These studies have revealed the features, including internal co-ordination, and interaction with solvent that may influence the reactivity of highly functionalized organozinc reagents, and explain why they are so tolerant of these functional groups.

