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PREFACE

This is a special issue with a two-fold purpose. This year marks the fiftieth anniversary of the discovery of the NMR phenomenon in bulk matter, and so it is therefore appropriate to reflect on the enormous impact that NMR techniques have had on structural chemistry. The impact has been no more pronounced than in the area of stereochemical non-rigidity, which is displayed in its richest diversity in the areas of inorganic and organometallic chemistry. The issue includes a selection of papers most of which reflect the current power of NMR techniques in structural chemistry, with the emphasis on coordination complexes and organometallic compounds which exhibit intramolecular exchange processes.

However, the authors invited to contribute to this particular issue have been selected for an additional reason to their expertise in this area of chemistry. Applications of NMR in inorganic chemistry stem from the infancy of the technique in the early 1950s. The first intimations that many chemical bonds were in a constant state of flux were obtained in 1955 for an inorganic compound, $Al(BH_4)_3$, and in 1956 for an organometallic compound, $Fe(\sigma\text{-}C_5H_5)(\eta\text{-}C_5H_5)(CO)_2$, the latter discovered by this Journal's distinguished editor-in-chief. These discoveries stimulated enormous activity in the exploration of the wide range of chemical fluxionality, and led to a definitive monograph on the subject in 1975, edited by Lloyd Jackman and Albert Cotton. The contributions of the latter to the emergence of fluxionality in many areas of inorganic chemistry are particularly notable and extensive. Since the mid 1970s the subject has been taken up by many other researchers, amongst whom Edward Abel must be singled out. His contributions to the subject have been particularly in the area of transition metal complexes, with emphasis on those containing Group 6 (S, Se & Te) ligands and, latterly, N ligands. His judicious combination of chemical synthesis and use of one- and two-dimensional NMR techniques has led to the identification and quantitative analysis of a wide range of dynamic processes in transition metal chemistry. Notable examples are pyramidal inversions at metal coordinated atoms, metallotropic shifts of many varieties, ligand scramblings, restricted bond and/or ligand rotations and ring conformational rearrangements.

This issue provides a current assessment of NMR techniques in inorganic chemistry, particularly when used in conjunction with X-ray crystallography. It is also offered as a tribute to Eddie Abel, on the eve of his retirement, from some of his many friends, in recognition of his very special contributions to this field of research.

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