It is a pleasure to compile and edit this volume on the *Photophysics of Organometallics* with my intention to present some of the most interesting current research in this area and also hopefully to bring it in a concise form to a wider audience. This field has changed so much over the past 30 years and it is truly unrecognizable from initial studies carried out in the late 1970s and early 1980s. Although the photochemistry of organometallic complexes, rightly considered as a distinct part of inorganic photochemistry, has been investigated for around half a century now, it was initially thought that organometallic systems were just too prone to photochemical dissociation to have sufficiently long lived electronically excited states to be able to study their characteristics and their subsequent photophysical mechanisms. The determination of luminescence from such complexes, in some cases even long lived emission in fluid solution, changed all that and made it feasible to investigate the excited states of organometallic systems in considerable detail. Hence, a new field was born.

Initially, photophysical studies of organometallic complexes were undertaken with the objective to learn about the fundamental nature of the excited states and mechanisms arising from them. The electronic characteristics of the excited state, its lifetime, its solvent and temperature dependence, the mechanism of its return to the ground state via thermal processes (including energy transfer and electron transfer pathways) and, most importantly, identification of the excited state responsible for the molecular photochemistry were all investigated for each newly found luminescent organometallic system. During this period, thoughts of practical applications were secondary to uncovering the basic nature of the excited states in these compounds, which seemed to have everything – both organic components (ligands) and inorganic components (metal centers). Thus, these molecules provided a complicated puzzle of participating excited states in the photophysics and the photochemistry. Unraveling all this information has most definitely been a challenge to the researchers in this field. However, since these fundamental studies, the area has developed to such an extent that it now reveals a wide range of important applications, for instance, in catalysis, probes, sensors, optical switches, non-linear optical materials, radiopharmaceuticals, photocleavage of DNA and organic light emitting diodes (OLEDs).

This volume is both a snapshot of current research in the field and an introduction to the various components that are of importance to it. The chapters are representative of some of the most significant experimental and theoretical research
currently being carried out, and they are written by leading scientists in the area. It is the intention to inform the reader on the many facets of the excited states in organometallic complexes and their photophysical processes. In every instance, we have made an effort to provide an introductory overview with a clear interpretation of the current research, and also to indicate any emerging applications, where appropriate. The credit for this goes to the authors of the individual chapters and I am most grateful to them for their expertise and their great efforts. The net result is a succinct representation of their research areas at this present time. Consequently, I hope that this volume is useful not only to the researchers and students already in this field, but it can help attract new people who may have an interest in it. If this field changes as much in the next 30 years as it did in the last 30 years, it will be an extraordinary one to participate in.

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