

Preface

In a broad sense, radiationless transitions in a polyatomic molecule encompass a wide spectrum of intramolecular processes of energy storage and disposal. In such processes a molecule changes its electronic and/or vibrational state without the absorption or emission of radiation. The concept dates back to the discovery of predissociation in the early twenties. Initially, the radiationless transition in organic molecules was a theoretical concept developed in the late sixties and early seventies. The early experiments were carried out in bulk and with white light sources.

The advent of the lasers in the beginning eighties dramatically improved the experimental situation and provided more critical tests of the theory. It allowed the direct observation of intersystem crossings and internal conversion through a variety of spectral and time resolved experiment in combination with supersonic beam techniques.

Very high resolution techniques in which the Doppler effect was reduced to be on the order of the natural linewidth solved many of the problems still revealed by the lower resolution experiments and deepened the theoretical understanding of nonradiative processes.

This special issue is dedicated to Jan Kommandeur on the occasion of his 60th birthday. Jan made many significant contributions to this field over a large fraction of its recent history. His friends and colleagues want to express their congratulation through their contribution to this special issue the content of which reflects very well the current state of the art.

We would like to thank the authors who contributed to this issue. Jan has many more friends and colleagues that were not able to contribute because of the limited time and space available. We all wish him the best.

W. Leo Meerts
Joshua Jortner
Ahmed H. Zewail