

# **Homogeneous and Heterogeneous Photocatalysis**

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## FOREWORD

Ever since the oil crisis of 1973, researchers in various fields of chemistry have proposed various schemes to conserve energy, as well to convert the sun's abundant and limitless supply of energy to produce chemical fuels (e.g., hydrogen from water, ...). The enthusiasm had no previous parallel in the mid-1970's. Unfortunately, despite the several good proposals, the results have proven - in retrospect - somewhat disappointing from an economic viable point of view. The reasons for the meagre results are manyfold not the least of which are the experimental difficulties encountered in storage systems. Moreover, the lack of a concerted, well orchestrated interdisciplinary approach has been significant. By contrast, the chemical advances made in the understanding of the processes involved in such schemes have been phenomenal. A recent book on this issue ( M. Gratzel, Energy Resources through Photochemistry and Catalysis, 1983) is witness to the various efforts and approaches taken by researchers. In the recent years, many more groups have joined in these efforts, and the number of papers in the literature is staggering !

One of the motives for organizing this NATO Advanced Research Workshop stemmed from our view that it was time to take stock of the accomplishments and rather than propose new schemes, it was time to consider seriously avenues that are most promising. For this very purpose, our approach, as we viewed it, was to bring together experts from the various chemical fields (Photochemistry, Electrochemistry, Catalysis, Colloid, Semiconductor, and Biochemistry ) - an interdisciplinary approach - and from various NATO ( and non-NATO ) countries to one meeting place such that we could fully and informally discuss recent achievements and problems.

Our hope from this Workshop was that the participants would put forward and point out the important problems yet to resolve towards achieving a viable system for energy conversion and energy storage. Additionally, and by no means least, we saw the Workshop participants tackling other important issues regarding photocatalysis in the synthesis of chemically useful products, and in the environmental pollution area.

The Workshop would not have been the same without the dedicated help of the staff of the Hotel Villa del Mare, to whom we owe the creation of a very warm and pleasant atmosphere, conducive to scientific and social interactions among the participants.

Finally, we thank the Directors of the Scientific Affairs Division of NATO and of the Programme on Selective Activation of Molecules for granting us the financial support for a very fruitful Advanced Research Workshop.

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September 10, 1985

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