

## Preface

Thin films of lead chalcogenides have been very extensively studied for the last four decades, mainly due to their fruitful application in near infrared detection systems. It has been felt that besides the above mentioned use, there are certain potential applications which have received little attention so far. These include, infrared photography, visible silverless photographic films, solar selective surfaces and narrow gap solar thermophotovoltaic systems. In view of this a programme was undertaken in 1978 at the Semiconductor Laboratory, Department of Physics, Indian Institute of Technology, Kharagpur, to explore further the possibility of using thin films of lead chalcogenides in the above named less developed areas. The present thesis is the result of such a study conducted during 1977-1983. During this period a considerable amount of effort was spent on creation of various facilities which were lacking for undertaking this kind of work.

The thesis is divided into seven chapters and efforts are made to present each chapter a selfcontained one with inclusion of introduction to each topic, review of literature and the investigations performed in the respective areas. The last chapter contains summary of the total work done.

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