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Motto: "Small is beautiful"

Editor's Introduction

This volume contains proceedings of the summer school on the physics and applications of narrow gap semiconductors. The school took place in Nimes, September 3-15, 1979. It was a very happy occasion for the 150 participants from 20 countries. The setting of southern France with its climate and Roman monuments, the sea, the food, the wine - everything contributed to the general mood of satisfaction and well-being.

As far as the scientific program is concerned an attempt was made to organize a school rather than an advanced institute. Thus, I tried to persuade the lecturers not to be afraid of being too simple and to teach the students rather than their colleagues. It is for the reader to judge whether this effort has been successful. The second aim of the program was that of completeness. One can in principle do all semiconductor physics on narrow gap materials. The last defense line has been conquered with the recent unambiguous demonstration of the existence of excitons in InAs and InSb. Clearly, it was not possible to include all the subjects, but the crucial fields of research are presented. Some important applications of narrow gap semiconductors are also given. This has been motivated by the conviction that society, which allows us the luxury of doing whatever strikes our fancy, should know that our fancy produces something useful once in a while. I tried to arrange the material according to its logical order of development, realizing, however, that the book will be read as separate chapters rather than cover to cover.

I would like to express here particular appreciation to Prof. I.M. Tsidilkovskii and to Prof. B.L. Gelmont, who, although unable to participate in the school, have sent me their manuscripts. They did all the work and missed all the fun. On the other hand I regret that Prof. C. Vérié did not submit the written version of his excellent lecture on the experimental aspects of resonant states in zero gap semiconductors.

I dedicate this book to the memory of Jan Bodnar, a graduate student of mine, who died of a heart attack in 1977, at the age of 27. Jan was an exceptionally capable and gentle boy. In September 1977 during the Warsaw Conference on the Physics of Narrow Gap Semiconductors he presented

his theoretical work on the band structure of Cd_3As_2. This work is known today as "the Bodnar model". The predictions he had made were fully confirmed by later experimental investigations, as shown by Prof. F.A.P. Blom in his lecture. Jan Bodnar, during the short time he had, mastered the art which is the mark of all good physics: to conclude correctly from insufficient information. Jan would have done a lot had Fate not been so blind.

In conclusion I would like to express personal thanks to my friend Prof. Jean-Louis Robert, the director of the School, for the tremendous work he has done to make this event a success. He had started a year before the School opened and will hopefully have finished a year after its completion. Jean-Louis made a point of not saying "no" to anybody during the two weeks we were in Nimes. It turned out to be rather difficult to run things that way, but in the end everybody was delighted. To Jean-Louis and his crew, tous mes remerciements.

Wlodek Zawadzki

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