



university of nijmegen
netherlands

DEPARTMENT OF PHYSICS

Applications are invited for a one year position of a visiting (full-) professor, who has experience in one of the experimental research fields represented in the department: solid state physics, atomic and molecular physics, high energy physics and biophysics.

Applicants are expected to commence duties in September 1976.

Applications, including a curriculum vitae, an account of professional experience and publications, and the names of two referees should be sent to

Prof. Dr. R.T. Van de Walle, Faculty of Science, Toernooiveld, Nijmegen, Netherlands, where further information concerning the post and the department may be obtained. The application- deadline is August 1st 1975.

2nd EPS Conference of the Condensed Matter Division on Dielectrics and Phonons

Budapest, Hungary, 21-25 October 1974

The two topics of the scientific sessions were DIELECTRICS and PHONONS — one subject dealing with materials, i.e. dielectrics, the other with a group of physical phenomena — lattice vibrations; phonons.

It turned out that the linking of these two scientific fields with partly remote and partly common problems was an excellent idea. Twenty four countries were represented by 408 participants: 234 came from the Western countries, 63 were Hungarian, and the rest from other Socialist countries. Twenty one invited papers and 194 contributed papers were presented, generally in three parallel sessions.

The invited papers gave a general idea about the properties of phonons in fluids and solids, the role of phonons in the quantum diffusion of atoms and the connection between the different phonon modes. Consideration was given to the investiga-

tion of lattice vibrations, the role of dynamical properties in structural phase transitions, and the connection between excitons and phonons in different kinds of solids, e.g. in molecular solids and in polymers. On the other side the invited papers were dealing with the basic properties of dielectrics, e.g. the dielectric approach to lattice dynamics, the relation between the dielectric constant and some other properties, dielectric surfaces, the electronic structure of dielectrics and the nature of ionic, covalent and intermediate bonds in solids. We had a connection between the thematics on phonons and dielectrics, and the effects of piezoelectricity in pyroelectrics.

The discussions of anharmonic effects in solids, the lattice effects in dielectrics and the interaction of lattice effects with different kinds of phonons were very interesting, too.

The abstracts booklet of
THE SECOND CONFERENCE
OF THE CONDENSED
MATTER DIVISION OF THE
EUROPEAN
PHYSICAL SOCIETY ON
DIELECTRICS AND PHONONS

Budapest 1974
21-25 October

is available from:

European Physical Society
P.O. Box 39
CH-1213 Petit-Lancy 2
Geneva, Switzerland

Price:

Individual Ordinary	
Members	SFr. 18.—
All others	SFr. 24.—

Order form: Abstracts booklet on Dielectrics and Phonons

Please send me copies of the abstracts booklet

Name :

Address :

I am/am not* an Individual Ordinary Member

Signature

* Delete which not applicable

The invited papers had been selected so as to provide an introduction to the contributed papers, in which new results were communicated in short presentations.

The high attendance at the lectures proved that the scientists belonging to one of the two different groups had a mutual interest in the results achieved in the other field, and they attributed great importance to the discussions on the mutual connections. The organization had taken good care to ensure that the invited lectures in different sessions did not overlap.

The introductory paper to the Session dealing with Phase Transitions was presented by W. Cochran, Physics Dept., University of Edinburgh. He summarized the results achieved in this field during the last 15 years. It has been shown that Born's model for an alkali halide can be extended

to explain the lattice dynamics of simple ionic crystals. Recently Stirling using a similar model has satisfactorily fitted the experimental measurements for SrTiO₃. The theory has been extended by Cowley and Bruce to include anharmonic effects. This is the area which is currently of greatest interest to those concerned with structural phase transitions, and which must eventually succeed in connecting the lattice dynamics approach to the more orthodox approaches to the theory of phase transitions.

The theory of a new phenomenon in acoustics called "phonon echoes" was given by the very interesting paper of J. Joffrin, Université Paris VI. Laboratoire d'Ultrasons, in terms of a classical presentation. The essential properties which are the time reversal, the node to node coupling, and the existence of a non-linear interaction of phonons with an external electric field were described. The applications for the physicist and for the engineer were also briefly reported.

K. Dransfeld, Max-Planck-Institut für Festkörperforschung Hochfeld-Magnetlabor Grenoble, summarized in his talk the new results of the dynamical properties of disordered materials at very low temperatures (below 1°K). All these observations are consistent with a new type of low lying amorphous materials but which are absent in perfect crystals.

Both light and neutron scattering methods are extensively used to study phonon spectra of solids. A comparison between the two methods was made by N. Kroó, Central Research Institute for Physics, Budapest, in order to show the similarities and differences, with typical examples given mainly in those fields where the applied method is superior.

The physics and chemistry of solid surfaces exposed to vacuum or to gases are proceeding very fast. G. Heiland's (2. Physikalisches Institut der Rheinisch-Westfälischen Technischen Hochschule, Aachen) valuable and detailed report on the new results in this field was therefore of topical interest. Reliable methods for the preparation of clean surfaces and new ways of characterization and investigation provide meaningful data on a much wider scale than a few years ago. Stimulated by recent experimental results, the theoretical activity has grown considerably. Driving forces for research on surfaces originate not only from theory, but mainly from applications in solid state electronics and in heterogeneous catalysis. New experimental methods of surface research are the following:

- (i) the surface crystallographic structure and its transitions can be recognized by the elastic scattering of low energy electrons and the atomic steps analysed;
- (ii) inelastic scattering of electrons, photoemission, photoconductivity and ellipsometry have been used for the spectroscopy of vibronic and electronic surface states;
- (iii) new data on interactions between solid surfaces and molecules is contributed by molecular beam mass spectroscopy.

From written and oral comments, the Organising Committee of the Conference had the distinct feeling that the conference had been warmly received, and that participants from both subject groups had benefited from this contact with each other.

G. Szigeti, Budapest



The Physics Department of the Facultés Universitaires de Namur (Belgium) invites applications for a permanent position at the

Chargé de Cours

level, from French speaking Ph. D.'s with exceptional qualifications in both teaching and research.

Teaching duties will consist in general physics courses in candidatures in sciences. Research responsibilities will include experimental or/and theoretical research in the following existing interest groups: atomic, molecular and electronic spectroscopies; theoretical and mathematical physics; solid state physics; applied low energy nuclear physics.

Applications forms may be requested from the

*Service du Personnel
des Facultés Universitaires
Notre-Dame de la Paix,
61, rue de Bruxelles,
B-5000 Namur.*

1st EPS Conference of the Nuclear Physics Division on Nuclear Interactions at Medium and Low Energies

Harwell, England, 24-26 March 1975

The Nuclear Physics Division of the EPS is at present cooperating with National Societies to create a series of European topical conferences in the field of nuclear physics. Two conferences per year are planned.

The first of this series, organized in cooperation with the Institute of Physics, was held at the UKAEA Harwell Laboratory in Britain on 24-26 March 1975 on the topic of nuclear interactions at medium and low energies¹. The conference attracted about 170

participants, more than a third of whom came from continental Europe.

In his welcoming speech B. Rose (Harwell) was guardedly optimistic about the future of nuclear structure physics. For British physicists the new and upgraded machines at Daresbury and Oxford and the use of the high-flux neutron facility at the three-nation Laue-Langevin Institute in Grenoble were welcome developments. The main problem, as elsewhere in Europe, seemed to be the maintenance

of a steady input of good people into the field.

The subject that produced the most interesting contributions and stimulated the most discussion was that of heavy ion physics, one of the growth areas of recent years. The application of heavy ion reactions to nuclear spectroscopy both extends and complements the information obtainable from light ion reactions. The first invited talk in the opening session, which was chaired by the Chairman

¹ The heavy ion conference held three years earlier at Aix-en-Provence, France, should probably be termed the zeroth divisional conference, since the Nuclear Physics Division had not then been officially formed.