INFRA-RED AND RAMAN SPECTROSCOPY

AN International Course on infra-red and Raman Spectroscopy was held under the direction of Prof. Dr. A. Simon at the Institute of the Technical College in Dresden in co-operation with VEB Carl Zeiss JENA. Thirty scientists from Czechoslovakia, Hungary, Rumania and the German Democratic Republic took part. The programme included 17 lectures with relevant practical work dealing with theoretical and practical principles of infra-red and Raman Spectroscopy, also with instrumental problems especially questions concerning the All-Automatic Infra-red Spectrophotometer UR 10 made by VEB Carl Zeiss JENA. In his introductory lecture on "Raman and Infra-red Spectroscopy as Complementary Methods" Prof. Simon illustrated with examples how the two methods complement each other and how appropriate it is to discuss them both together. The theme of the course was based on this point of view.

Dr. Kriegsmann, Dresden, spoke about Instruments for Raman Spectroscopy, giving a survey of the present state of Raman technique and details of the design of powerful Raman sources. He also held lectures on the "Nature of Characteristic Frequencies", "Qualitative Analysis and Purity Testing" and "Vibration Spectra and Physical and Chemical Properties". In yet another lecture he dealt with the principles of Intensity Measurement and then gave information about the accuracy attainable in practice.

Dr. Stegar, Dresden, spoke about "Symmetry and Selection Rules", "Problems of Solvents in Infra-red Spectroscopy" and "Intermolecular Effects".

Dr. Paetzold, Dresden, gave a systematic description in his lecture "Techniques for Solid Materials" of all preparation methods occurring in infra-red spectroscopic investigations of solids.

The two lectures "The Importance of Infra-red Spectroscopy in Industry with Particular Attention to Composition Determination" by Dr. Fruwert, VEB Leuna-Werke, and "On Quantitative Analysis" by Dr. Kimmer, VEB Chemische Werke Schkopau, gave some examples of the industrial application of infra-red spectroscopy.

Members of VEB Carl Zeiss JENA Staff held the following lectures: Dipl.-Phys. Kramer on The Characteristic Properties of an Infra-red Spectrophotometer which are typical of the state of development and efficiency of modern infra-red instruments. Ing. G. Pohl discussed The Technico-Physical Properties of the UR 10 and their Testing and gave hints to the users of control measurements with the UR 10. Dipl. Ing. Gunther lectured on the Limitation of Errors and Elimination of Errors in the Electronic and in the Servo System of the UR 10. Dipl.-Phys. Buttner spoke about recently designed Ancillary Instruments for the UR 10, for the Measurements of Liquid, Gaseous and Solid Substances, which were introduced to users of the UR 10 for the first time at the Course. They are the Variable Space Liquid Cell, the Long Path Gas Cell, the accessories for the KBr-pressing technique (vibrator, press and press tool) and the single beam device for the UR 10. The Practical Work was held in 6 groups consisting of 4-5 people, a scientific assistant of the institute as Group Leader and for experiments with the UR 10 of a member of the Zeiss staff for explaining any problems related to the instrument.

Characteristic examples of qualitative and quantitative analysis, the determination of composition, purity testing as well as the required preparation and photographic technical methods of infra-red and Raman Spectroscopy were elaborated. The new attachments for the UR 10 were also used, giving participants of the course a direct opportunity to become familiar with the efficiency of these instruments. In the Instrument-Practical Work Testing of the Technico-Physical Properties of the UR 10 and Error Limitation in the Servo System and in the Electronics of the UR 10 the use of the single beam device for the UR 10 was explained and demonstrated in detail. The possibilities offered to the user by this device with regard to speedy control of the functions of the UR 10 evoked greatest interest of all those present. Foreign colleagues were particularly anxious to get to know more about the functions of the UR 10 and their control in order to carry out in future small adjustments to the instrument themselves. In addition this work gave valuable advice for the correct operation and appropriate application of the instrument.

Great interest existed also in the new Photoelectric Recording Photometer Lirepho 2 with Compensating Recorder, which was used for Raman Spectroscopy.

Discussions showed that this first course on infra-red and Raman Spectroscopy fulfilled the expectation of those participating, as theory and practice as well as prerequisites relating to instruments were dealt with in correct proportion.—*Courtesy, JENA Review.*