HISTORY OF THE HUNGARIAN VACUUM SOCIETY
(Magyar Vákuumtársaság)

Original (1986) by late Iván Péter Valkó
Updated (2001) by György Radnóczi and (2017) by László Kövér

From the first years of the 20th century there has been a strong interest in vacuum science and technology in Hungary, due mainly to the use of vacuum by Tungsram Ltd. Some of its early achievements include the lamp with tungsten filament in 1903 and the lamp filled with krypton in 1935. An independent vacuum society has not been established in Hungary but vacuum scientists have found a home within the Mathematical and Physical Society. After World War II when scientific life was reorganized the structure remained similar. Vacuum and Thin Film Sections have been established in the Roland Eötvös Physical Society (REPS), in the Scientific Society for Telecommunication and in the Society for Optics, Acoustics and Cinema Techniques. Lectures and discussions were organized by these Sections. The cooperation of these sections was prompted by the Coordinating Committee for Vacuum and Thin Film Techniques of the Association of Scientific and Technical Societies in Budapest which was the umbrella organization of the societies. Hungarian vacuum scientists contributed regularly to international vacuum periodicals and conferences.

Opening session of JVC-12/EVC-10/AMDVG-7 (Balatonfüred, 2008). From left to right: *S. Bohátka*, Chair of the conference, President of VPTA of REPS 2003-2011, Secretary of HVS 1996-2011; *B. Pécz*, Chair of the International Programme Committee, President of VPTA of REPS 2012- ; *J. Gyulai*, President of HVS 1991-, Honorary Chair of the conference; *H. Oechsner* and *J. S. Colligon*, Honorary Chairs of the conference; *B. P. Barna*, Chair of the International Organizing Committee.

Several vacuum experts became individual members of IOVST and a delegation participated in the Namur Conference in 1958. After its reorganization into the IUVSTA as an international body of national committees in 1959, Hungary became a member and in 1962 the Hungarian National Committee of IUVSTA was established by the Section of Engineering Sciences of the Hungarian Academy of Sciences. Prof. G. Szigeti, first secretary and later chairman of the Hungarian National Committee, was for many years the most ardent promoter of organized vacuum activities in Hungary. He also took a lively part in the corroboration of the international profile of IUVSTA. In February 2008 our committee changed its name to Hungarian Vacuum Society (HVS) to meet better the rules of IUVSTA – members, organisation and activity unchanged (*https://www.kfki.hu/elftvakuum/iuvsta/hvs.htm*). The sister-organisation of HVS in Hungary is the Division of Vacuum Physics, Technology and Applications of Roland Eötvös Physical Society (VPTA of REPS) (*https://www.kfki.hu/elftvakuum*). HVS is responsible for the IUVSTA-related affairs of the Hungarian vacuum-related scientists and engineers, and VPTA coordinates all other affairs and organizes the Joint Vacuum Conferences.

Prof. J. Antal, Chairman of the late Hungarian National Committee of IUVSTA became president-elect of IUVSTA in 1980 and acted as president of IUVSTA in the triennium 1983-1986.

The HVS, having had at first about a dozen members, now has a strength of 48. It is composed of vacuum science and technology experts associated with industry, academic research and universities. Chairmen of the HVS have been E. Winter (1962-1964), G. Szigeti (1964-1976), J. Antal (1976-1988), P.B. Barna (1988-1991) and J. Gyulai (1991-). The Councillors of IUVSTA, nominated by HVS: G. Szigeti (1965-1971), I.P. Valkó (1971-1977), J. Antal (1977-1980), P.B. Barna (1980-1986), I. Berecz (1986-1989), L. Guczi (1989-1995), G. Radnóczi (1995-2001, 2007-2013) and L. Kövér (2001-2007,2013-). In March 1979 HVS organized the 36th Executive Council Meeting of the IUVSTA in Budapest and in October 1985 the 51st Meeting in Debrecen. ECM-78 was also organized in Debrecen (1997), in connection with the 7th Joint Vacuum Conference, organized by the Hungarian, Austrian, Slovenian and Croatian Vacuum Societies. In September 2008, ECM-105 was hosted in Budapest by the HVS. The HVS has taken an active part in the Divisions of IUVSTA since their development. P.B. Barna as a member of the former International Thin Film Committe (ITFC) was one of the initiator to amalgamate ITFC into IUVSTA founding the Thin Film Division in 1978. He was the first secretary of the division in the period 1978-1983. L. Kövér was elected for the Chair of the Applied Surface Science Division of IUVSTA in the period 2007-2013. P. B. Barna took a leading organisational role on behalf of the IUVSTA in running jointly sponsored Educational Workshops on Science and Technology of Thin Films in the International Centre for Theoretical Physics (ICTP) in Trieste.

The following IUVSTA Workshops and Schools were organized and held in Hungary:

- 1971: IUVSTA School on Thermodynamical problems of vacuum Physics and Techniques, Mátrafüred;
- 1974: 2nd IUVSTA International Summer School on Vacuum Physics, Collision Phenomena, Fonyód;
- 1977: 3rd IUVSTA International Summer School on Vacuum Physics, Interaction of charged particles-molecules and condensed matter at low pressures, Fonyód;
- 1980: International IUVSTA Summer School on Processes of Thin Film Formation, Fonyód;
- 1983: 2nd IUVSTA International Summer School on Processes of Thin Film Formation, Hajdúszoboszló;
- 1992: 5th IUVSTA Workshop *"Polycrystalline Films: Structural Evolution and Structure/Property Relationships"*, Balatonaliga;
- 1996: 14th IUVSTA Workshop *"Nanoscale Modification of Surfaces and Thin Films: Physical and Chemical Aspects"*, Balatonföldvár;
- 1999: 22nd IUVSTA Workshop *"X-Ray Photoelectron Spectroscopy: from Physics to Data"*, Hortobágy;
- 2004: 42nd IUVSTA Workshop *"Electron Scattering in Solids: from Fundamental Concepts to Practical Applications"*, Debrecen;
- 2006: 48th IUVSTA Workshop *"Influence of Trace Elements on the Nucleation and Growth of Thin Films"*, Budapest;
- 2008: 55th IUVSTA Workshop *"Electron Transport Parameters Applied in Surface Analysis"*, Siófok-Szabadifürdő;

The IUVSTA Prize for Science (2010) was awarded to Péter B. Barna *„For his outstanding results in understanding thin film growth phenomena and structure-property relations in one and multiphase thin films"*.

Prof. Péter B. Barna, winner of the 2010 year IUVSTA Science Prize

One of the most important activities of HVS has been the initiation, organization and sponsorship of seminars, summer schools, workshops, symposia, training courses and national and international conferences in Hungary. These events have been arranged with international lecturers with usually 60 to 120 participants. The

organization of regional joint events has been initiated by the Austrian Vacuum Society and the predecessor of VPTA of REPS under the sponsorship of HVS in 1978. The first "Austrian-Hungarian Vacuum Days" was held in 1979 in Győr, Hungary, and the second in 1981 in Brunn am Gebirge, Austria. These events grew to a periodically organized regional Joint Vacuum Conference (JVC). At JVC-3 in 1985 (Debrecen, Hungary) Yugoslavia was invited to participate in the organization. Later the Croatian and Slovenian Vacuum Societies have been the successors of Yugoslavia and from 2004 the Czech and Slovak Vacuum Societies joined the organizers, too. VPTA of REPS and HVS hosted also the JVC-7 in 1997 (Debrecen) and later the JVC-12 (in conjunction with the 10th European Vacuum Conference (EVC-10) and the 7th Annual Meeting of the German Vacuum Society (AMDVG-7)), in 2008 (Balatonalmádi).

Events with international participation organized by HVS from the 1950s were among the first international conferences in the field also with the aim of creating forums from time to time for the meeting of scientists from the West and East during the time of the cold war: - Colloquium on Gas Discharges, Balatonvilágos, 1958 - Conference on Solid State Physics, Balatonfüred, 1959 - Symposium on Luminescence, Balatonvilágos, 1961 - Symposium on Electron and Vacuum Physics, Balatonföldvár, 1962 - 2nd International Optical Conference with thin film section, Budapest, 1963 - International Colloquium on Thin Films, Budapest, 1965 - Seminar on UHV, Esztergom, 1967 - 2nd International Colloquium on Thin Films, Budapest, 1967 - International Thin Film Conference, Budapest, 1975 - Conference on Plasma Physics and Application, Balatonvilágos, 1979 - ESCA Seminar, Debrecen, 1979. Two further major conferences were organized in Hungary, the 4th European Conference on Surface and Interface Analysis (ECASIA) in Budapest (1991) and the 33th European Conference on Surface Science (ECOSS-33) in Szeged (2017).

As a co-organizer, HVS was involved in the organization of the 19th International Vacuum Congress (IVC-19), held in conjunction with the International Conference on Nanoscience and Technology (ICN+T 2013) and the 15th International Conference on Solid Surfaces (ICSS-15), Paris, France (2013).

Prof. Gábor Somorjai delivers his plenary talk at the ECOSS-33 conference (Szeged, 2017)

Two IUVSTA Technical Training Courses (TTCs) on Vacuum Physics and Technique (in Hungarian) were organized by HVS and VPTA: 6th TTC, Debrecen, 2006; 10th TTC "*Practical Vacuum Techniques"*, Debrecen, 2009. In addition, 5 more Courses in Vacuum Technique (in Hungarian) have been held, with altogether 251 participants. A textbook on "*Vacuum Physics and Technique*", written by S. Bohátka, was published by the REPS (Budapest, 2008; 2nd revised version in 2015).

Members of the HVS meet regularly and the scientific meetings are jointly organized with the VPTA of REPS. Besides scientific presentations, at these meetings members receive information about current national and international vacuum events based on reports of the participants. Other topics such as industrial and educational progress are occasionally referred too.

In the last decade the HVS has continued to represent Hungary in IUVSTA. It does this in close co-operation with the VPTA of REPS. Since most of the members are participating in both organizations this is a straightforward matter at present.