

ON THE 90TH ANNIVERSARY OF ACADEMICIAN SERGIU RADAUTSAN



1926—1998

The role of Academician Sergiu Radautsan in the history of physics in Moldova, semiconductor physics to be exact, is hard to be overestimated.

S. Radautsan was born on 17 June 1926, to a family of teachers Ion and Nina Radautsan. His father was a teacher of French and spoke 9 languages, his mother was a Conservatoire graduate. His education started in Cishinau (B.P. Hasdeu high school, then Moldova State University, faculty of physics). An important and significant fact was his doctoral course in Chisinau first, under the guidance of Prof. M.V. Kot, the Head of the Experimental Physics Department in the 1950s, who initiated a research into the physics and chemistry of semiconductor materials at the State University. A bit later, future academician left for St. Petersburg (Leningrad at that time), to continue his PhD course at the A.I. Ioffe Physical-technical Institute (LFTI). There, under the guidance of Prof. N.A. Goryunova he came to investigate semiconductor materials with intrinsic defects and defended his PhD thesis

“Investigation of solid-solutions on the base of indium-arsenide”.

Returning to Chisinau in 1959 after obtaining the PhD degree at LFTI, he set up the Laboratory of Semiconductor Compounds, the Head of which he was for the rest of his life. In 1964, after the organization of the Institute of Applied Physics, the laboratory became a part of the Institute and is now bearing his name: Laboratory of Physics of Semiconductors "Sergiu Radauțan". For many years the principal direction of this laboratory was the synthesis and study of multicomponent semiconductor compounds. From these moments one can say that in the Moldovan semiconductor physics a new period began— the Radautsan period. Now the collaborators of this lab deal with: elaboration of the technology of obtaining of ternary and multinary compounds. Experimental and theoretical studies of the physics and physical chemistry of the obtained compounds as well as of the magnetic, optical and luminescent properties; experimental and theoretical studies in the field of obtaining thin semiconductor films; elaboration of multifunctional electronic, optoelectronic and photonic devices on their basis, elaboration of advanced technologies.

From 1961 till his last days he was a prolific researcher at the Institute of Applied Physics of the Academy of Sciences of Moldova. In 2016, the Institute in collaboration with Moldova State University organized the 8th International Conference on Materials Science and Condensed Matter Physics dedicated to the 70th anniversary of foundation of first research institutions of the ASM, the 55th anniversary of the inauguration of the Academy of Sciences of Moldova, the 70th anniversary of Moldova State University and the 90th anniversary of academician S. Radautsan. He also was the initiator of the foundation of Polytechnic Institute in Chisinau (Technical University nowadays) whose first rector he was in 1964—1973. On 17 June 2016, the Technical University organized a Conference to commemorate its first rector: „In memoriam: Academician Sergiu Radautsan – 90th anniversary”.

In 1969 a self-financed Microelectronics Laboratory was set up at the Polytechnic Institute. The laboratory worked directly with the LFTI, with the laboratory headed by Academician Zhores Alferov, a Nobel laureate. The studies carried out in micro- and optoelectronics, in the technology of the design and manufacture of semiconductor lasers, as well as in several other areas were highly appreciated internationally. The high level of the research into semiconductors was influenced also by the fact that some of the outstanding experts from all over the Soviet Union, among them Nina Goryunova and Dmitry Nasledov, used to come to Chisinau to deliver lectures on most advanced topics.

Academician Radautsan, together with his disciples and colleagues, developed a technology of obtaining many various ternary semiconducting compounds, that have a wide range of optical, electrical and radiative properties, which is important from both theoretical and practical purposes. He and his team found a new class of ternary compounds of spinel type like CdCr_2S_4 that have the properties of magnetic semiconductors. His scientific results are reflected in over 900 publications. Among them books: Арсенид и фосфид кадмия (1976, in collaboration); Полупроводники системы $\text{ZnS-In}_2\text{S}_3$ (1980, in collaboration); Магнитные полупроводники на основе селенхромита меди (1984, in collaboration); Многокомпонентные халькогениды $\text{A}^{\text{II}}\text{B}_2^{\text{III}}\text{C}_4^{\text{VI}}$ (1990, Ed.); Scientific and technological achievements related to the development of European cities (1997, Co-Ed.); etc. (List of his publications can be found on: <http://www.radautan.info/>). He had 120 patents to his credit. He

was the supervisor and scientific consultant of 60 doctors and 12 doctors habilitate. Academician Radautsan was an active participant of over 200 national and international scientific gatherings in different countries. He was Invited professor at the Universities (respective faculties) in Europe, Asia, the USA and Canada.

When the Republic of Moldova became a sovereign state, Academician Radautsan was elected vice-president of the Academy of Sciences of Moldova, then an Honorary Member of the Romanian Academy of Sciences, of the Russian Academy of Engineering Sciences, of the International “K. Tsiolkovsky” Astronautics Academy, of the Central European Academy of Sciences and Arts. He was Doctor Honoris Causa of the West University (Timisoara, Romania), Transylvania University (Brasov, Romania), Al. I. Cuza University (Iasi, Romania), the Technical University (former Polytechnic) and the Academy of Economic Studies (both Chisinau, Moldova).

He was also the initiator of several important scientific events. For instance: the 8th International Conference on Ternary and Multinary Compounds (ICTMC-8) in 1990; the biennial Summer Conferences on Ternary and Multinary Semiconductors. Those latter science workshops were attracting specialists from the whole Soviet Union. They contributed a lot to the development of physics in Moldova. On an initiative of Acad. Radautsan, Chisinau had the honor to host a NATO Advanced Workshop on “Scientific and Technological Achievements Related to Big Cities”. That workshop gathered experts from Europe, the USA, newly independent states from the former USSR. The workshop took place in 1996, just a month before Acad. Radautsan’s 70th birthday. Unfortunately it was the last scientific event organized by him.

The honors were all well-deserved. Academician Sergiu Radautsan became one of the Moldovans well-known abroad; he was deeply respected by his Western colleagues, and not only scientists. On the other hand, the period of transition to the market economy proved to be hard for many areas of life, including science and research in Moldova. Even in that difficult period Academician Radautsan was trying, very often succeeding, to find opportunities to support Moldovan science and maintain its potential. The first Rector of the Polytechnic Institute was fully aware of the necessity to integrate the research at specialized centers and universities with teaching. He was pulling efforts to draw the attention of the governance to the importance of scientific research and of good education. The lifelong achievements of Academician Sergiu Radautsan were recognized by the State. He was the holder of the title the Emeritus Person, of the Order of the Republic, the highest distinction in Moldova, as well as of other honorific awards. In 1983 and 1998 he was named State Prize Laureate, the second time posthumous. Academician Sergiu Radautsan was a well-known physicist, a person of character and charisma, an administrator of a high level.

The obituary “In memory of Sergeĭ Ivanovich Radautsan” was signed by famous scientists: Alferov, Z.I., Gulyaev, Y.V., Keldysh, L.M., Kuznetsov, F.A., Prokhorov, A.M., Perel, V.I., Veselago, V.G., Gurevich, A.G., Prochukhan, V.D., Ivanov-Omskii, V.I. and published in *Semiconductors*, Volume 32, Issue 11, November 1998, pp.1253-1254.

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