

**RECOGNIZED RESEARCHER AND VALUABLE UNIVERSITY PROFESSOR  
ON THE OCCASION OF THE 80th ANNIVERSARY  
OF PROF. ANATOLIE CASIAN**



On November 17, 2015, Anatolie Iradion Casian (until 1995 Kasiyan), Head of Theoretical Mechanics Department of Technical University of Moldova, Professor, DSc, Academician of International Thermolectric Academy, corresponding member of American-Romanian Academy of Arts and Sciences, Laureate of National Prize in the Domain of Science and Technique celebrated his eightieth anniversary.

Anatolie Casian was born in the village Colicautsi, Briceni region, Republic of Moldova. He graduated from the Department of Theoretical Physics with first degree honors of Kishinev State University (now State University of Moldova, Chisinau), in 1957. Being one of the best students during the study at the University, he received a Lenin scholarship. In the period of 1957–1960, he continued postgraduate study in theoretical physics at the same University. In 1965 he defended his candidate's dissertation (now doctoral) in physics and mathematics under the guidance of acad. V. Moscalenco. His dissertation was focused on the theoretical study of the polaron effect in ionic crystals taking into account the Coulomb interaction between the polarons. The coupled plasmon–phonon modes were studied, and the scattering of polarons on these mixed modes was considered in the framework of the developed approach based on the method of diagrams and Green functions. It was one of the most advanced treatments of the polaronic problems for that time.

In the period of 1960–1969, he was engaged at the Academy of Sciences of Moldova (ASM) in different positions: junior and senior researcher, scientific secretary of Physical-Technical and Mathematical Section of the ASM. At the same time, in 1962–1963, he studied at

Moscow State University under the supervision of acad. N. N. Bogoliubov. He used the opportunity to attend the course of Prof. V. L. Bonch-Bruevich, acad. A. A. Abricosov, and acad. I. M. Lifshits at Moscow State University for advancing his professional qualification. He also participated in work of the all scientific seminars headed by Prof. V. L. Bonch-Bruevich and Professors S. V. Tyablicov and D. N. Zubarev at the Steklov Institute of Mathematics. On this basis, he became one of the qualified physicists in Moldova.

At the end of the sixties (1967–1969), he was delegated in Algeria as Professor of Alger University. There, under his supervision, the assistant of Alger University Naziha Kesri defended the doctoral thesis; at that time, she was the second Algerian woman with a PhD degree at Alger University. Later, she defended the second thesis of DSc.

After the return from Algeria, A. Casian accepted the invitation of Rector, acad. S. Radautsan, and became the Head of Theoretical Mechanics Department of the Kishinev Polytechnic Institute until 1976. At this Institute position, he continued the activities on the consolidation of Theoretical Mechanics Department which was begun by the founder and the first Head of Department Dr. A. Marinciuc. Since 1970, he has been the scientific secretary of the Institute Council and has contributed essentially to the improvement of the Council's activities. In the period of 1976–1982, he worked at the Moldova Filial of Research Institute of Current Sources, Scientific and Production Enterprise Kvant, Moscow, as senior researcher, Head of laboratory, Vice director, and Director. There, he has established new scientific relations in the domain of thermoelectricity, in particular, the collaboration with Prof. Z. Dashevsky that continues up to now. From May 1982 till present, he works again at Kishinev Polytechnic Institute (now Technical University of Moldova) as the Head of Theoretical Mechanics Department. In 1988 he defended his doctoral dissertation (now Doctor Habilitat) "Kinetic Effects in Semiconductors and Multilayer Structures Caused by Dynamical Screening and Interference of Scattering Mechanisms." After that, in 1990, he received the title of university professor.

In 1994 he was elected full member of the International Thermoelectric Academy in and in 1999 a corresponding member of the American–Romanian Academy of Arts and Sciences. He was Vice-Head of theoretical physics Council at the Academy of Sciences of Moldova, Vice-Head of the PhD and DSc thesis examination board in theoretical physics at the Academy of Sciences of Moldova. He is a member of the International Editorial Board of "Journal of Thermoelectricity," Assistant Editor of "Moldavian Journal of the Physical Sciences," Academy of Sciences of Moldova, and a member of the editorial board of the journal "Physics and Modern Technologies," Chisinau.

For more than 50 years, Prof. A. Casian actively has been involved in different scientific investigations; he has more than 300 scientific publications, including 2 monographs and 7 manuals for students. He supervised more than 20 scientific projects. In the last years, he has participated, as a team leader, in the implementation of five International projects: INTAS-96-535; USA Grant N00014-97-C-0219 supported by Office of Naval Research, USA; CRDF-MRDA grant No ME-3010; INTAS-01-0184", STCU 5344. All these projects have been successfully implemented. At present, he participates, as a team leader, in the implementation of international project FP7 308768, together with four teams from the United Kingdom, Germany, Latvia, Bulgaria, and an industrial company from the United Kingdom. He presented reports at many international scientific conferences, including invited papers (most recently, at XIII, XIV, XV, and XVI International Forums on Thermoelectricity, 2009, 2011, 2013, and 2015). He participated with oral communications at European Conference on Thermoelectricity ECT-2013, Netherlands, and ECT-2014, Madrid. Prof. A. Casian received the Diploma of the

best paper at the 7<sup>th</sup> International Forum on Thermoelectricity, Kiev, 1996. He is Laureate of the National Prize in the Domain of Science and Technique (2004).

The name of Prof. A. Casian is well known in the scientific community. He was invited professor to the Ben-Gurion University, Beer-Sheva, Israel (1996 and 2002); H. Poincare University, Nancy, France (1997 and 1998); Institute Nationale Polytechnique de Lorraine, Nancy, France (2000) (for one month each year); office of Naval Research, Washington, USA (1999) where he presented a report to the Technical Council; University of California-Riverside (2002) for one week; Observatoire des Micro et Nano Technologies, Paris, France (2005); Institute of Surface Chemistry of Academy of Sciences of Ukraine, Kiev (2012, 2013); University of Wurzburg, Germany (2013); and Institute of Solid State Physics of Latvia University (2014), where he participated in seminars on thermoelectric organic materials. Under his guidance, seven PhD theses were defended and two theses are currently under preparation.

The area of scientific research of Prof. A. Casian is considerably extended by a lot of considered physical problems as well as by the diversity of investigated solid state materials: fundamental problems of the crystal lattice dynamics and the theory of semiconductors; transport and thermoelectric phenomena in low-dimensional quantum well structures; and thermoelectric properties of quasi-one-dimensional organic crystals. Some of the research directions where he has obtained new and valuable results are as follows.

1. *Theory of kinetic and optical phenomena in polar semiconductors under conditions of dynamic screening.*
2. *Thermoelectric effects in the structures with many p-n-homo and heterojunctions.*
3. *Kinetics of current of nonequilibrium carriers in the detectors of ionizing radiation.*
4. *Optical, transport, and thermoelectric properties of some low-dimensional structures.*
5. *Thermoelectric properties of quasi-one-dimensional organic crystals.*

The list of selective representative publications includes:

1. **A. I. Casian**, Kinetic effects in Semiconductors of Different Dimensionality (in Russian) Kishinev, *Stiintsa*, 1989, 122 p.
2. I. I. Balmus, Z. M. Dashevsky, and **A. I. Casian**, Thermoelectric Effects in Multilayered Semiconductors Structures (in Russian) Chisinau, *Stiintsa*, 1992, 144 p.
3. **A. Casian**, I. Sur, and A. A. Balandin, Modeling of the Electrical Conductivity in Multivalley PbTe/Pb<sub>1-x</sub>Eu<sub>x</sub>Te Quantum Wells (chapter in *Nanoscience and Nanoengineering*, Series in Micro and Nanoengineering, V.3). Ed. by E. Andronescu, et al., *Romanian Academy of Sciences Publishers*, Bucharest, 2002.
4. **A. I. Casian**, Thermoelectric Properties of Electrically Conducting Organic Materials (Chapter 36 in *Thermoelectric Handbook: Macro to Nano-Structured Materials*). Ed. by M. Rowe, CRC Press, FL, USA, 2006.

Prof. A. Casian is still actively engaged in different investigations; this is certified by new results obtained in the last years. The most important publications of A. Casian in the last three years include:

1. **A. Casian** and I. Sanduleac. Thermoelectric properties of nanostructured tetrathiotetracene iodide crystals: 3D modeling. *Mat. Today. Proc.*, 2, 504, (2015).
2. S. Andronic, **A. Casian**, and V. Dusciac. Peierls structural transition in Q1D crystals of TTF-TCNQ type for different values of carrier concentration. *Mat. Today. Proc.*, 2, 3829, (2015).

3. I. Sanduleac and **A. Casian**. Nanostructured TTT(TCNQ)<sub>2</sub> Organic Crystals as Promising Thermoelectric n-Type Materials: 3D Modeling. *J. Electron. Mat.* DOI 10.1007/s11664-015-4018-8, (2015).
4. **A. I. Casian**, J. Pflaum, and I. Sanduleac. Prospects of low-dimensional organic materials for thermoelectric applications, *J. Thermoelectricity*, N 1, 16, (2015).
5. **A. Casian** and I. Sanduleac. Thermoelectric Properties of Tetrathiotetracene Iodide Crystals: Modeling and Experiment, *J. Electron. Mat.*, 43, 3740-3745, 2014. DOI: 10.1007/s11664-014-3105-6.
6. I. Sanduleac, **A. Casian**, and J. Pflaum. Thermoelectric Properties of Nanostructured Tetrathiotetracene Iodide Crystals in a Two-Dimensional Model, *J. Nanoelectron. Optoelectron.* **9**, 247-252, 2014. ISSN. 1555-130X (Open access).
7. **A. Casian** and V. Dusciac. Effect of Lorentz number decrease on thermoelectric efficiency in quasi-one-dimensional organic crystals. *J. Electron. Mat.* 42, 2151, 2013. DOI: 10.1007/s11664-013-2555-6.

Editorial Board of “Moldavian Journal of Physical Sciences” and Physical Society of Moldova heartily congratulate Anatolie Casian on the occasion of his jubilee and wish him good health and new creative achievements in the pedagogic and scientific activities.