

ACADEMICIAN PROFESSOR DR. EMIL BURZO ON HIS 80TH ANNIVERSARY

Foreword

Professor **Emil Burzo** was born in 1935, August 30, in Moreni, county Dâmbovița. He graduated Faculty of Physics from Babeș-Bolyai University Cluj-Napoca in 1959 and in 1958 Faculty of Mechanics from Technical University Cluj-Napoca. Prof. Emil Burzo earned his PhD in Physics at University of Timisoara in 1972, under the guidance of professor A.Cișman and professor P.Lamoth.

Career: engineer at Carbochim plants in Cluj-Napoca (1958-1963); associate engineer and lecturer at Babes-Bolyai University, Cluj-Napoca (1964-1969); Institute of Physics Bucharest (researcher (1969), Senior Researcher III (1971); Senior Researcher II (1978); Senior researcher (1984); Head of Laboratory (1974-1976); Professor at University Babes-Bolyai University (1990 - present), and dean of the Faculty of Physics (1992-2000). Prof. Emil Burzo was Director of the Center of Excellence "Solid State Physics" (certified by MET) and Multi-User Research Base, and PhD supervisor in specialities Solid State Physics and Materials Science. As PhD supervisor prof. Emil Burzo guided around 40 Ph.D students, including 10 under the co-guardianship with the Universities of Grenoble, Strasbourg and Paris.

Emil Burzo is member of Romanian Academy, and president of the Cluj-Napoca branch of Romanian Academy.

Other professional activities: Associate researcher CNRS-Grenoble, Associate Professor - Carnegie Mellon University, Pittsburgh; Professor cl. I. - J.Fourier Grenoble University. He has presented lectures or invited lessons to over 30 universities in Europe, USA or China. As editor, professor Emil Burzo is responsible for volumes in the field of magnetism, at Publisher Springer Verlag (Germany).

Member in professional organizations: Commission of Physics at the National Council for Attesting Titles, Diplomas and Certificates; Commission of the Romanian National Council of University Research (1997-2003); President of the Romanian Association of Materials Science - ARM; President of the Romanian Society of Magnetic Materials; Member of the Balkan Council of Physics; Chairman of the Section Cluj Romanian Society of Physics (1992-2000); Board Member European Society of Magnetic Materials EMMA (1998 - 2003); member of the Romanian-American Academy, member of the European Physical Society, and the Society of Magnetic Resonance, a member of the Scientific Council ICPE Bucharest (2000), member of the Scientific Council Dubna PAC Solid State Physics.

Scientific activity: Prof. Emil Burzo has a rich scientific activity, with significant original results recognized internationally. The scientific activities of Prof. Emil Burzo were focused on experimental research and modeling of the properties for magnetic and superconducting materials. He elaborated and studied the physical properties of over 150 new alloys systems, intermetallic compounds or superconducting materials and developed models to justify their behavior. These studies led to highlighting the technical applicability of new hard magnetic materials with high specific energy. The results have materialized in the introduction of the Nd-Fe-B and bonded type magnets in manufacturing (in collaboration with ICPE or Sinterom Cluj).

From the large number of original results obtained by Prof. Emil Burzo, we just wish to present the following :

- the developing of a model to justify polarization bands R (5d) considering the presence of both the local exchange interactions 4f-5d and the short-range and 5d 5d-3d-5d;
- justify negative polarization of delocalized states in 3d and 4f compounds cerium and vanadium respectively;
- the contributions of different magnetic interactions wave functions and how the effects of hybridization affect the values of the magnetic moments.
- two models bearing his name;
- the role of electronic concentration of diamagnetic matrix in the magnetic behavior of the nickel-based alloys;
- It emphasized that Jaccarino-Walker model used to analyze the magnetic behavior of some solid solutions, appears only as a particular case of a more generally model proposed by prof. Emil Burzo;
- He studied the physical properties of a wide variety of oxide glasses with ions of transition metals 3d and 4f and analyzed valence states of these ions on the matrix composition;
- He emphasized the quasi-amorphous behavior of solid solutions based on V_2O_5 etc.

Prof. Emil Burzo scientific results were published in around 450 papers, 286 in ISI quoted journals (see SCOPUS 2015). He was invited to sustain plenary presentations at many national and international meetings and conferences.

He presented 30 invited lectures at international conferences and that 60 scientific papers published in the proceedings of international conferences. Many scientific articles published are the result of international collaboration with researchers from France, Germany, USA, Netherlands, Austria, Poland, Russia, Moldova, Belgium, Sweden. Acad.prof.univ.dr. Emil Burzo stands by the publication of 21 books or book chapters that have appeared in prestigious foreign publishers (19 books in Springer

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Verlag Publishing and one each in North Holland publishing and Institute of Physics, respectively). These are remarkable for their accuracy and scientific level.

Scientific papers and books developed by prof. Emil Burzo are frequently cited in international literature. Thus, according to SCOPUS, quoted in international journals, appearing about **2200** citations.

By understanding the importance of modern directions in material science, Prof. Emil Burzo introduced new courses, related to modern methods in the study of solid state physics. His theoretical and experimental researches, as well as his pedagogic experience were fructified into a series of books focusing on physical properties of solid state. It is distinguished by quality and rigor volumes "Physics of the magnetic phenomena" (3 volumes) and "Permanent magnets" (2 volumes). They are commonly used by students and Romanian researchers.

Awards: Prof. E. Burzo received the Romanian Academy Award, The Excellence Award of Hungarian Academy, Award of Excellence "Opera Omnia" of the Romanian Ministry of Education and Research, Presidential Seal of Honors, USA - MA, Excellence Diploma of Research Institute for Electrical Engineering and several degrees of excellence of the Babes-Bolyai University. He was awarded the National Order "Faithful Service" with the rank of Commander for scientific activity. He was elected to the Institute of Physics Fellow (Great Britain). Prof. Emil Burzo is Doctor Honoris Causa of the Universities of Timisoara, Constanta, Technical University of Cluj-Napoca, University Valahia of Targoviste and University Petru Maior of Targu- Mures, etc.

Prof. Emil Burzo is part of the editorial boards of referees for 8 international journals and two national magazines. He is deputy editor for Romanian Journal of Physics, and section editor for Springer-Verlag Publishing Magnetism Heidelberg - New York.

Today, at the age of 80 years, prof. Emil Burzo can be satisfied that the young researchers supervised by him at the Faculty of Physics, continues his scientific research at the Babes-Bolyai University and in prestigious research institutes from Europe and United States of America and that developed his school of magnetism and established modern research in the field of solid state physics.

Happy Birthday professor Emil Burzo !

Prof.dr. Aurel Pop
Dean - Faculty of Physics

