

Politehnica University Timisoara
1989-2019
100 Scientific Books in Highlight

POLITEHNICA UNIVERSITY TIMIȘOARA, 1989 - 2019: 100 SCIENTIFIC BOOKS IN HIGHLIGHT

Daniel DEJICA-CARȚIȘ, Editor
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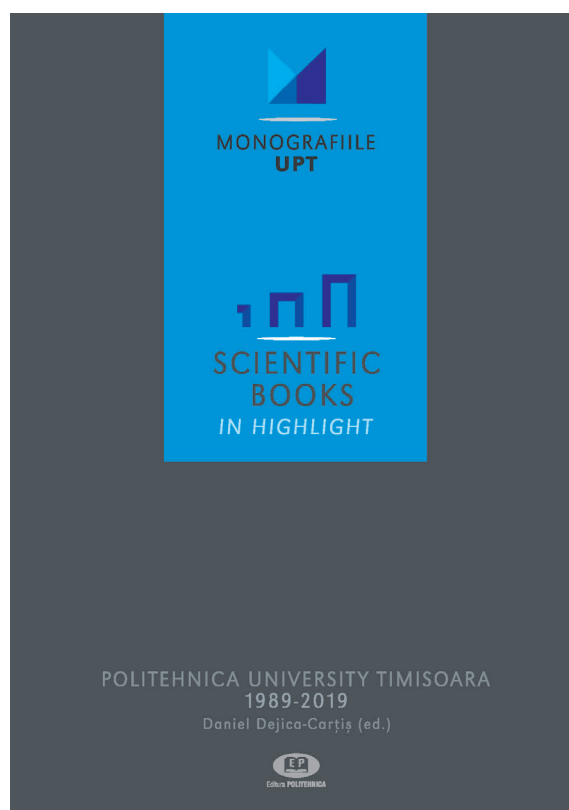
Message from the Rector

In 2018 we celebrated the Centenary of Romania, in 2019 the Centenary of Banat, and in 2020 we celebrate the Centenary of the Timișoara Polytechnic. It is interesting how history sometimes fits things in and ties them together. In the same way in which the Banatians' desire to have a higher education institute would not have been possible in the absence of the Great Union, the Polytechnic School could not have been created without the union of the Banat region with the Motherland. The emulation that led to the establishment of the Polytechnic School by the royal decree signed by His Majesty King Ferdinand on November 11, 1920, raised Timișoara to the rank of Civitas Academica. In return, Politehnica, in its own mission, has contributed in an exemplary way to the economic, social and cultural development of Timișoara, Banat, Romania and even beyond these borders.

If at the beginning - as the Rector of the time, Victor Vălcovici, would declare at the institution's 10th anniversary - "Politehnica was like a new born baby ... almost everything was missing", now, the Politehnica University Timișoara, the oldest institution of higher education in the western part of Romania, is included in the category of the most valuable institutions of higher education in the country, that of universities of advanced research and education.

Today, we are proud that more than 130,000 graduates have carried on the spirit of the Polytechnic and have had a remarkable contribution to the economic development of Romania and beyond, the quality of the engineers trained in Timișoara being a respected and appreciated business card anywhere in world.

In addition, the Polytechnic School of Timișoara is recognized as a powerful center for research, technological transfer and innovation. The excellent results materialized by the hundreds of grants and scientific contracts obtained in various fields of advanced and applied research, the internationalization of the research activity by



participating in research networks or consortia, the increased degree of valorisation of the research results carried out by publishing in prestigious ISI journals, are undeniable examples of the activity of excellence carried out here.

The reputation that our university enjoys in this area is also highlighted by the position on the leading places in international rankings (for example, SCImago Rankings 2018 place us in the third position at national level, and in the 47th place among more than 3,000 universities in Central Europe).

The present editorial project, dedicated to the Centenary of our university, supports the aforementioned by reflecting the results of the scientific activities of the teaching staff, published in monographs or specialized volumes at prestigious publishers from abroad, the Publishing House of the Romanian Academy or the Technical Publishing House in the last 30 years.

I am convinced that the 100 books summarized in this monograph, in addition to the recognition of their authors, will also contribute to strengthening the prestige of the institution at international level and will facilitate the internationalization of scientific research and cooperation by establishing new links or strengthening existing ones with universities and research institutes around the world.

Prof. univ. dr. eng. Viorel-Aurel Șerban,
Rector of the Politehnica University Timișoara

A Message from the Editor: Celebrating Academic Excellence

The edited volume **Politehnica University Timișoara, 1989-2019: 100 Scientific Books in Highlight** is part of an extensive editorial project and book series aimed at celebrating the 100th anniversary of our institution. It includes a part of the books published by the members of the Politehnica academic community at international publishing houses or in Romania, at Editura Academiei Române [The Publishing House of the Romanian Academy] and Editura Tehnică [Technical Publishing House] in the above-mentioned period.

A centennial offers a good reason to analyze the past and look into the future. In particular, such an editorial project highlights multiple results and puts forward several objectives: the monograph reconfirms our status of advanced research and education university, reflects the research interests of the teachers in the various scientific branches of our university, can be a valuable source of reference for teachers but also for the students enrolled in the university master's or PhD programs, may stimulate further research activities and publication projects by the younger generation, and last but not least, can be act like a genuine business card for our colleagues from the universities in Romania and abroad, increasing thus the collaboration opportunities the degree of visibility and internationalization of our institution.

Editing such a monograph was a challenging endeavour, given the diversity of scientific interests of the colleagues from the research centers or departments of the university, and the different time intervals when these scientific research results were materialized by the publication of the books. The major criterion underlying the arrangement of the books in the monograph was the existing classification in the Nomenclature of the fields and specializations / programs of university studies. Within the same branch of science, the arrangement was made chronologically.

The books were thus grouped under four major fundamental domains, including engineering sciences, mathematics and natural sciences, social sciences, humanities and arts. These domains were subsequently grouped under the various existing branches of science at our university.

Engineering sciences, the largest book section, includes 77 contributions grouped under four branches of science: civil engineering; electrical engineering, electronics and telecommunications; systems engineering, computers and information technology; and mechanical engineering, mechatronics, industrial engineering.

The remaining 23 contributions are shared by mathematics and natural sciences, social sciences, humanities and the arts. Accordingly, the 7 contributions included in the mathematics and natural sciences section are shared by mathematics (2) and chemistry (5); the social sciences section includes 5 contributions in the fields of administrative sciences and economics; and last but not least, 11 contributions are included in the humanities and arts section, of which, philology (10) and architecture (1).

12 out of the 100 contributions were published in Romania by Editura Academiei Române (6) and by Editura Tehnică (6). The majority of the books published abroad include those published by prestigious publishing houses such as Springer (16) or Elsevier (5), and also by many other famous publishing houses such as Cambridge Scholars Publishing, CRC Press, DeGruyter, Imperial College Press, Kluwer Academic Publishers, Royal Society of Chemistry or Taylor & Francis, to name just a few. Out of the 100 contributions, 75 are authored or edited books, while 25 are book chapters signed by our colleagues and included in collective volumes edited by international authors.

In a nutshell, this edited monograph is intended to celebrate academic excellence and to thank all authors who contributed to the prestige, visibility and internationalization of our institution. However, it is worthwhile mentioning that there are many other monographs or edited volumes published by our colleagues in Romania or abroad, just as valuable as the ones included in this edited volume, which due to objective reasons were not included in this edition of the monograph, and which, with joined efforts, should be included in a future edition or in other similar monographs.

Vivat, crescat, floreat!

Daniel Dejica-Carțiș, Editor
Professor and Dean of the Faculty of Communication Sciences
Politehnica University Timișoara

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