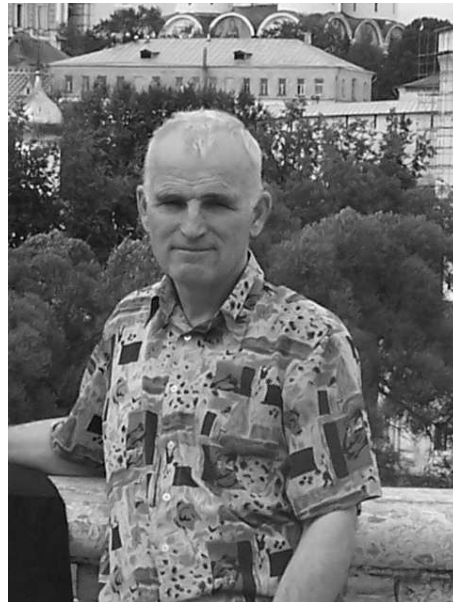


## SCIENTIFIC LIFE

### PROF. STEFAN RADEV, CORRESPONDING MEMBER OF THE BULGARIAN ACADEMY OF SCIENCES AND HIS CONTRIBUTIONS TO FLUID MECHANICS



It is a real pleasure for us to look over the long and fruitful career of Prof. Stefan Radev as an applied mathematician in Fluid mechanics. His orientation to Fluid mechanics has been inspired by his teacher Prof. Bl. Dolapchiev, eminent mathematician, scientist in mechanics (had a scholarship under the guidance of prof. L. Prandtl at Goettingen before the II-nd World war) and pedagogue. Prof. Radev started his real research in Fluid mechanics together with the development of his PhD thesis in 1968 at Sankt Petersburg (former Leningrad State) University (SPU) with Prof. S.V. Vallander as an advisor. The thesis, entitled “Flows of Rarefied Gases at High Reynolds Numbers”, defended in 1972, treated the mathematical modelling of some flows of weakly

rarefied gases. Shortly after his return to Sofia, Prof. Radev started working as a research fellow in the Institute of Mathematics and Mechanics of Bulgarian Academy of Sciences and changed his interests to the stability of liquid jets. He succeeded to organise a group of young talented engineers and mathematicians, some of them PhD students, who have been enthusiastic in studying different transport and stability problems of jets. Prof. Radev and his collaborators obtained completely new results on the stability of liquid compound jets (consisting of a liquid core and immiscible surrounding layer). A great number of papers have been published during this initial period, some of which entered his second thesis for obtaining the scientific degree “Doctor of Sciences in Mathematics” in 1987. This fundamental work is dedicated to the flow and instability of liquid capillary jets interacting with another immiscible liquid.

The scholarships (PostDocs) of Prof. Radev at the Technical University of Eindhoven, Netherlands, in 1977/78, at the Tokai University, Hiratsuka, Japan in 1982/83 and the Joint Institute for Nuclear Research, Russia in 1984/85 had an important influence on his scientific evolution. But the most decisive contribution to his further scientific path has his collaboration with l’Institut Universitaire des Systemes Thermiques Industriels (IUSTI), University of Provence (at present Aix-Marseille University), Marseille, France, where he has been periodically visiting professor and coordinated several joint research projects between CNRS (Centre National de la Recherche Scientifique, France) and BAS, all of them treating interesting problems of textile, glass and optical fibre drawing for new material production industry. Apart from this collaboration, Prof. Radev has very close research relations (some of them connected with bilateral and international projects) with scientists of different foreign Institutes and Universities e.g. Institute of Heat and Mass Transfer of Byelorussian Academy of Sciences (Minsk), Moscow University (Russia), Institute of Problems in Mechanics of Russian Academy of Sciences (Moscow), Tokai University (Japan), Laboratoire de Physique et Mecanique des Milieux Heterogenes, ESPCI, (Paris, France), Democritus University of Trace (Xanthi, Greece). These collaborations are still active and have produced and produce many papers, invited lectures and presentations, which are well cited by the international scientific community. The considered problems are mainly in the area of flow instability, physico-chemical hydrodynamics, heat and mass transfer theory and rarefied gas dynamics. The scientific papers of Prof. Radev are more than 140, from which more than 70 are published in refereed journals including those with impact factor.

Prof. Radev has written 2 students’ textbooks: one in Analytical Mechanics [30] (in collaboration with A. Anchev and L. Lilov) and one in Fluid

mechanics [31] (in collaboration with S. Tabakova), both in Bulgarian. These textbooks are used by the bachelor and master students in mathematics at the University of Sofia, as well as by bachelor students of Technical University-Sofia.

Finally, a book on modern concepts of instability and turbulence has been recently published by Prof. Radev (with co-authors Acad. S. Panchev and Prof. N. Vitanov) by the BAS Publishing House [32], which brings together the classical and new ideas of the most difficult and unsolved problems of fluid mechanics.

Prof. Radev still teaches the courses on Fluid mechanics and Hydrodynamic Instability to the master students in applied mathematics at the University of Sofia. His students and former PhD students have become well-known scientists all over the world. The main reason for his successful professional career is his cleverness, the exactness of his thoughts and the ability to see the importance and novelty of problems. Prof. Radev has always offered strong encouragement to others, to enjoy their work, think broadly across conventional boundaries and discuss their ideas with others.

Prof. Radev was Director of the Institute of Mechanics of Bulgarian Academy of Sciences from 1986 till 1992. He has significant contribution to establishing of the leading position of the Institute in the structure of the Bulgarian Academy of Sciences as well as within the Bulgarian research on mechanics. Prof. Radev grounded and headed the Laboratory of Physical and Chemical Hydrodynamics and is the first Head of the Department of Fluid Mechanics after its establishing in 2010. From 1999 Prof. Radev is Editor-in-Chief of the Journal of Theoretical and Applied Mechanics. From 1988 till 2000 and from 2009 he is Chairman of the Bulgarian National Committee for Theoretical and Applied Mechanics and a member of the General Assembly of International Union of Theoretical and Applied Mechanics (IUTAM). In 2004 Prof. Radev was elected for a member-correspondent of the Bulgarian Academy of Sciences. For his activities in the area of Bulgarian mechanics and mathematics, he was awarded by the 'Cyril and Methodius' order II-nd and I-st degree and on 19th of November 2012 he was awarded by the highest award of the Bulgarian Academy of Sciences: 'Marin Drinov' honoring sign in decoration.

We hope that Prof. Radev will continue to enrich the field of fluid mechanics directly through his personal contributions for a number of years to come.

Prof. Dr Sonia Tabakova

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