

PREFACE TO THE SPECIAL ISSUE DEDICATED TO
THE 90TH ANNIVERSARY OF
PROFESSOR ZAPRYAN ZAPRYANOV



We are delighted to announce that this issue of the Journal of Theoretical and Applied Mechanics is dedicated to Prof. Zapryan Zapryanov, honouring him on his 90th birthday.

With this collection of papers, we, his students, co-workers and colleagues, would like to acknowledge his merits for the research in fluid mechanics and applied math-

ematics not only on a national but also on an international level. The papers are on different topics, but in some sense near to the scientific interests of Prof. Zapryanov.

Prof. Zapryanov was born on 26 January 1933 in the village of Topolovo, district Assenovgrad, situated in the Rhodope Mountains. His passion for mathematics dates from his early years in school and later as a student in mathematics at the Faculty of Mathematics of Sofia University. From this period his interest in the field of mathematical modelling of mechanics started while attending a seminar group organized by Prof. Bl. Dolapchiev.

After graduating as a mathematician, for a short period of time, Prof. Zapryanov has been a teacher in mathematics at different schools, including the most prestigious school at that time - the National Mathematical High School in Sofia.

The scientific career of Prof. Zapryanov has been long and very fruitful, starting with his doctoral work at the Moscow State University, in the late 1960s. He was awarded a Ph.D. in fluid mechanics under the guidance of Acad. G.I.Petrov, which was highly evaluated.

Soon after, he accepted a position as an associate professor in fluid mechanics at the Faculty of Mathematics and Informatics (former Mechanics) of Sofia University and became the head of the department of fluid mechanics at the Institute of Mechanics (former part of the Unified Centre of Mathematics and Mechanics) until 1990. Meanwhile in 1979, he was appointed as a full professor at the same faculty.

Prof. Zapryanov has been a pioneer in the application and further development of asymptotic methods in fluid mechanics after his scholarship (1973/1974) with Prof. Van Dyke, Stanford University, USA. His scientific activity covers a wide range of domains from creeping flows, steady and unsteady boundary layers, interaction of solid and fluid bodies, etc. Parts of these studies were included in his DSc thesis, defended in 1982. The application of his theoretical results to chemical engineering, physical chemistry and biology was highly appreciated by the research groups of Prof. Wasan, Illinois Institute of Technology, Chicago, of Prof. Brenner, MIT, USA, of Prof. Ivanov, Faculty of Chemistry, Sofia University and others.

The scientific papers of Prof. Zapryanov are more than 100, most of which are published in refereed journals and well cited. Prof. Zapryanov has written 2 students' textbooks in fluid mechanics [1–3], one of which is in two variants: in Bulgarian and in Russian with co-author Prof. Shkadov from Moscow State University and directed to the students in both countries. Prof. Zapryanov has published also 2 monographs [4, 5] on chemical hydrodynamics in Bulgarian and Russian in collaboration with the group of Prof. Polyanin, Institute for Problems in Mechanics of the Russian Academy of Sciences. According to Prof. Danov, Faculty of Chemistry, Sofia University: "Prof. Zapryanov combines an excellent mathematic skill and deep physicochemical understanding for his books [4, 5] and they became a natural

extension of the classical books of Levich “Physicochemical Hydrodynamics” and Edwards, Brenner and Wasan “Interfacial Transport Processes and Rheology”. His works made Prof. Zapryanov a father of the Bulgarian physicochemical hydrodynamic school.”

The main results obtained by Prof. Zapryanov’s group, including his former PhD students, have been collected, together with S. Tabakova, in the monograph “Dynamics of Bubbles, Drops and Rigid Particles” published by Kluwer Academic Publ. in 1998/1999 (hardcover) and by Springer in 2011 (softcover and electronic variant) [6]. The book can be used both as a textbook for graduate students and as a reference monograph for Ph.D. students and researchers. It became famous in the years, which is confirmed by its numerous citations and considered by the researchers as very inspiring for their studies. Here we give the opinion of Professor Moshe Favelukis, Shenkar – College of Engineering and Design: “For more than 30 years, I have been doing research on transport phenomena (fluid mechanics, heat, and mass transfer) with bubbles, drops, and particles. There are very few books on this subject and most of them summarize the existing knowledge in the literature. However, if you need a book that also teaches you this subject and takes you to the highest possible academic level, the book: *Dynamics of Bubbles, Drops, and Rigid Particles* by Zapryanov and Tabakova is certainly an excellent choice.”

As a head of the Department of Fluid Mechanics, Prof. Zapryanov organized the researchers and his descendants (around 14 PhD students over the years) into a very strong group, which was well known by the fluid mechanics communities all over the world. Apart from fluid mechanics, Prof. Zapryanov has activities as a long-term member of the editorial boards of the Bulgarian journals “Mathematics” and “Teaching in Mathematics” and an author of many textbooks and teaching materials on mathematics for secondary school students, also study books for candidate students and university students. Prof. Zapryanov is a member of the Bulgarian National Committee for Theoretical and Applied Mechanics and a member of the editorial board of JTAM from the very beginning.

We dedicate this special issue to Professor Zapryan Zapryanov, scientist and teacher, on the occasion of his 90th birthday, not only for his successful scientific career, but also because of the tremendously positive impacts he has made on many of us, as our colleague, mentor, teacher, and friend. We wish him good health, fruitful activity and happiness!

Finally, we do thank all authors for their very precious contributions to this special issue. The work of every anonymous referee is also highly appreciated.

Guest editor of the special issue of JTAM: Prof. Sonia Tabakova

Editor in chief of JTAM: Prof. Stefan Radev

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