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Preface

A commemoration of Alexey Antonovich Ilyushin

Viatcheslav V. Meleshko · Dimitri V. Georgievskii

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This Special Issue of the *Journal of Engineering Mathematics* is dedicated to the 100th anniversary of the birth of Alexey Antonovich Ilyushin (1911–1998)—an outstanding Russian scientist–mechanician of the twentieth century. The range of problems and directions where A. A. Ilyushin had achieved important successes is unusually broad. It covers literally all parts of classical continuum mechanics: the theory of viscoplastic flow, hydrodynamic stability, dynamics of deformable solids, formulation and validation of the law of plane sections in supersonic aerodynamics

V. V. Meleshko
Faculty of Mechanics and Mathematics, Kiev National Taras Shevchenko University, Kiev, Ukraine

D. V. Georgievskii (✉)
Mechanical and Mathematical Faculty, Lomonosov Moscow State University, Moscow, Russia
e-mail: cotedurhone@mail.ru

and connected problems on flutter, the theory of elastoplastic processes, the theory of plasticity, thermodynamics taking into account the measures of irreversibility and damage, the theory of viscoelasticity, strength of polymeric materials and constructions, the general theory of constitutive relation, non-classical models in continuum mechanics including non-symmetric approaches, and engineering mathematics.

A. A. Ilyushin was the creator of scientific inventions, the founder of world scientific schools in mechanics, and the chief-manager of state scientific and technical projects. His published books include contributions to plasticity [1–3], properties of materials [4,5], thermoelasticity [6], and continuum mechanics [7,8].

He was a Corresponding Member of the Russian Academy of Sciences (1943), winner of the State Award (1948) and Lomonosov Award (1995), Honorable Professor of Moscow State University (1994), Full Member of the Russian Academy of Missile and Artillery Sciences (1994), and an Honorable Member of the Saint-Petersburg Academy of Sciences for Problems in Strength (1996).

A. A. Ilyushin was continuously at the head of the Elasticity Theory Department in the Mechanical and Mathematical Faculty of Lomonosov Moscow State University from 1942 to 1998.

The papers included in this Special Issue are devoted to the subsequent development of subjects where Alexey Antonovich worked and created the foundations of both theory, engineering, and experimental validation.

When the material for this Special Issue was nearing completion for publication, tragic news was received from Kiev. On November 14, 2011, as a result of a car accident, Viatcheslav Vladimirovich Meleshko (1951–2011), the guest editor of this issue, died.

V. V. Meleshko was professor and head of the Department of Theoretical and Applied Mechanics, Faculty of Mechanics and Mathematics, Kiev National Taras Shevchenko University in Ukraine. The main subjects of his scientific interests included such applied and modern directions in mechanics as: wave processes and oscillations in elastic solids and waveguides, surface and solitary waves, dynamics of vortex structures, chaotic dynamics: mixing and turbulence, sound emission, the piezoelectric effect in ceramics, and biharmonic problems in mechanics of continuum.

V. V. Meleshko was author of three monographs [9–11] as well as more than two hundred articles in leading world journals and was an invited speaker at many international conferences and congresses.

He was a disciple of Academicians V. T. Grinchenko and A. F. Ulitko (Kiev, Ukraine) who are direct disciples of A. A. Ilyushin. So one can say that V. V. Meleshko was the scientific grandson of Alexey Antonovich Ilyushin. V. V. Meleshko was also the originator of the idea to dedicate a Special Issue of the *Journal of Engineering Mathematics* to 100th anniversary of Ilyushin's birth.

Colleagues, friends, and students will keep in their mind Slava Meleshko as a brilliant talent, remarkable scientist–mechanician, outstanding lecturer and teacher, and most fundamentally a wonderful person.

Thomas P. Witelski, Dimitri V. Georgievskii, Vadim S. Hudramovich, Valery I. Levitas

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