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Tribute to Krzysztof Wilmanski

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*The prospect of death does not bother me as much
as the sadness in leaving all my colleagues.*

Krzysztof Wilmanski



Some 20 years ago, Krzysztof Wilmanski began his research into the theory of porous and granular media, fields that are addressed in this special issue of *Acta Mechanica*. In contrast to earlier models for such media, Wilmanski introduced the porosity as a material field, and he derived a particular balance equation for this quantity based on thermodynamic arguments. A principal application of the resulting continuum model has been the investigation of linear wave propagation. This was the topic of one minisymposium at the *8th European Solid Mechanics Conference* in the Graz University of Technology, Austria, 9–13 July 2012. During this

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meeting, plans were made to publish a special journal issue with a selection of the papers presented in the three minisymposia dealing with granular and porous media:

- Mechanics of Granular Media (Organizers: Erich Bauer, Felix Darve and Joe D. Goddard)
- Methods to Predict the Structural and Mechanical Properties of Dense Granular Media (Organizers: Robert P. Behringer, Lou Kondic and Corey O'Hern)
- Wave Propagation in Saturated and Partially Saturated Porous Media (Organizers: Bettina Albers and Krzysztof Wilmanski).

In the aftermath of the conference, it was decided that certain of the papers would be considered for publication in *Comptes Rendus Mécanique* (Guest editors: Erich Bauer, Robert P. Behringer, Félix Darve, and Lou Kondic), while the remainder would be considered for publication in the present special issue of *Acta Mechanica* (Guest editors: Bettina Albers, Erich Bauer, Joe D. Goddard, Stefan Luding).

Already marked by the onset of pancreatic cancer, Krzysztof Wilmanski attended the ESMC conference in July 2012, in his role as co-organizer of the aforementioned minisymposium. Despite his rapidly declining health, he led the sessions—true to form—in his charming and amiable way, and he even made a presentation of his own work. However, following the return to Berlin his condition deteriorated rapidly, he passed away on August 26, 2012, at the age of 72. All his colleagues and friends were shocked by his premature demise, and all still mourn his loss. It was consequently decided to devote the present special issue to the brilliant scientist and warmhearted gentleman. Until the very end, he maintained many scientific plans, and we are extremely sad that he was not granted the time on this earth to fulfill them. However, his scientific achievements of nearly 50 years, reflected in some ten books and book chapters and one hundred fifty journal articles, and his friendly and enthusiastic nature will not soon be forgotten.

Krzysztof Wilmanski was a many-faceted scientist and teacher. In the course of his career, he not only worked in many different fields of engineering, mathematics and physics but he also spent time at various locations around the globe, interacting with numerous scientific colleagues, some mentioned in the brief summary below of his career.

Wilmanski studied Civil Engineering at the University of Lodz, Poland, where he did also his Ph.D. work in the field of Continuous Models of Discrete Systems. Later, at the Institute of Fundamental Technological Research of the Polish Academy of Sciences in Warsaw, he became the head of the research group *Continuum Thermodynamics*, a post he held for several years. In this period, he obtained his habilitation in the field of nonlocal continuum mechanics. As a postdoctoral visitor at the Johns Hopkins University in Baltimore, he collaborated with C. Truesdell and J. Ericksen on the axiomatic and kinetic foundations of continuum thermodynamics. The topic of his research as Alexander von Humboldt Fellow at the University of Paderborn and the Technical University of Berlin was the modeling of crystallizing polymers, plasmas and martensitic phase transformations. As a fellow at the Wissenschaftskolleg zu Berlin, he collaborated with I. Müller, R. Rivlin and J. Kestin on martensitic phase transformations, non-Newtonian fluids and acoustic waves in continua. At the University of Hamburg-Harburg, he did research on crystal plasticity and the evolution of textures. During his time at the University of Essen, he started the investigation of thermodynamic models of porous materials. For nearly 10 years, he was the head of the Continuum Mechanics research group at the Weierstrass Institute for Applied Analysis and Stochastics in Berlin.

However, Krzysztof focused not only on research but was also an enthusiastic teacher who never tired of answering the questions from students. He offered courses on mechanics and thermodynamics in Lodz, Warsaw, Poznan, Opole and Kielce. At the University of Baghdad, Iraq, he taught engineering courses. In Germany (Berlin, Paderborn, Hamburg, Essen), his teaching mainly addressed continuum thermomechanics, elasticity theory, the theory of thin shells, wave propagation and porous materials. He was very active in Italy and gave courses in Torino, at the CISM in Udine, in Ravello, Pisa and Rome. Also in Graz and Haifa, students could benefit from his interesting lectures. At the end of his career, he was member of the faculty of the ROSE School, Centre for Post-Graduate Training and Research in Pavia, and of the University of Zielona Gora, where he taught courses on solid mechanics and building physics.

In all these fields, Krzysztof Wilmanski achieved an outstanding reputation. In addition to the renowned research positions he held in Germany, he was awarded by the M. T. Huber Prize of the Polish Academy of Scientists and by the Lady Davis Prize of Technion. He was also active in scientific societies, e.g., serving as secretary of the International Society for the Interaction of Mathematics and Mechanics (ISIMM) for a number of years.

We, the Guest Editors of this special issue, express our appreciation to the contributors to the above-mentioned minisymposia of ESMC2012 who submitted their works to this special issue and in so doing have helped to pay tribute to our departed and highly esteemed friend and colleague, Krzysztof Wilmanski.