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19th International Conference on Internal Friction and Mechanical Spectroscopy

The Special Issue ICIFMS-19 in the Journal of Alloys and Compounds was created as a collection of selected contributions to be presented at the 19th International Conference on Internal Friction and Mechanical Spectroscopy conference (<http://icifms19.ru/>), which should have taken place in Moscow, from June 29 till July, 2020, but has been postponed due to the COVID-19 pandemic. We nonetheless decided not to change the initial dates for the start of the submission of abstracts and manuscripts and only to postpone the deadlines to the next year, when the Conference will hopefully take place in Moscow. The deadline for the paper submission is April 30, 2021. Therefore, the abstract and manuscript submissions are open and ongoing, the reviewing process starts immediately and each article is published after acceptance, in order to avoid delays in its dissemination. We hope that even in the worst-case scenario of long-lasting restrictions due to the pandemic, a valuable Special Issue focused on the scope of the ICIFMS-19 will remain. Moreover, the submissions for this Special Issue are not strictly subordinated to the registration and participation in the event in Moscow, so that it may become an opportunity for aggregating contributions on recent advances and new trends in solid state physics with mechanical/acoustic methods and also on the techniques from scientists who do not generally participate in this conference.

ICIFMS-19 is the 19th conference in a series that began in Providence (USA) in 1956 and continued in Ithaca (USA, 1961), Manchester (England, 1965), Providence (USA, 1969), Aachen (Germany, 1973), Tokyo (Japan, 1977), Lausanne (Switzerland 1981), Urbana (USA, 1985), Beijing (China, 1989), Rome (Italy, 1993), Poitiers (France, 1996), Buenos Aires (Argentina, 1999), Bilbao (Spain, 2002), Kyoto (Japan, 2005), Perugia (Italy, 2008), Lausanne (Switzerland 2011), Hefei (China, 2014), and Foz do Iguaçu (Brazil, 2017). The Conference started as International Conference on Internal Friction and Ultrasonic Attenuation in Solids (ICIFUAS) and for a few decades included major contributions on solid state acoustics, regularly hosting scientific personalities such as P.G. Bordoni, T.S. Kê, A. Nowick, A.V. Granato, A. Seeger, to name a few. With increasing specialization of research and number of conferences, the scope of ICIFUAS focused more and more onto frequencies from infra-acoustic to acoustic and the name was changed into ICIFMS, but contributions on solid state physics from any type of acoustic method are welcome, including, for example, Resonant

Ultrasound Spectroscopy, Ultrasonics, Brillouin Scattering.

The topics of the conference have been subdivided into:

- fundamentals and mechanisms of anelasticity;
- lattice dynamics;
- phase transformations;
- ionic mobility and diffusion;
- surfaces, interfaces, thin films, and nanostructured materials;
- anelastic characterization of functional and structural materials;
- composites;
- ferroelectric and magnetic materials;
- granular materials;
- metals, alloys, and intermetallic compounds;
- quasicrystals, amorphous materials, and liquids;
- polymers and soft materials;
- biomaterials;
- high and low damping materials and their applications;
- dynamical mechanical analysis;
- development, design, and potential applications of novel internal friction techniques.

The range of topics where the acoustic techniques provide useful or essential information and insight is broader than it appears. Since the last conference, the topic of low-damping materials includes contributions from groups working at the LIGO and VIRGO interferometers for detecting gravitational waves, as the lower the damping of the materials of the mirrors and their suspensions is, the higher is the sensitivity of the interferometers. Therefore, we encourage and invite scientists from neighboring research fields to share their expertise and results by submitting their papers to this Special Issue and, of course, to participate in the ICIFMS-19 conference to make this event even more outstanding.

A special paper has been written by V.A. Khonik to review the Interstitialcy Theory of A.V. Granato and its latest developments. Granato gave many fundamental contributions to different topics, from dislocations to point defects. The Interstitialcy Model belongs to the latter and provides new and important insight into the melting transition and the glass state.

It is a long-standing tradition of the ICIFUAS and then ICIFMS conferences to award the Zener Medal for outstanding achievements or careers in the field of anelasticity. The announcement is

usually made during the Conference Dinner, but in the present circumstances it has already been announced that the new Zener Laureate is Prof. Jose San Juan from the Department on Physics of the Condensed Matter of the University of the Basque Country, Bilbao, Spain.

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