

Submission Deadline—April 1, 2017



## Jan van der Merwe: Epitaxy and the Computer Age

Fabrication of well-ordered semiconductor thin films by precise deposition control of atomic layers is known to semiconductor engineers and device physicists as epitaxy and Frank-van der Merwe growth. Understanding and mastering this process was the precondition for the modern computer technology and has led mankind into the digital era and information age. The theoretical foundations for this quantum leap in human and technological civilization were laid by the South African physicist Jan H. van der Merwe, who passed away on February 28, 2016, on his 94th birthday.

To honor the contributions of Dr. van der Merwe, the *Journal of Materials Research* will publish a Focus Issue in 2017 to present latest developments in epitaxy, with the focus on the fundamental materials science and the past (historic perspective), present, and future of the field.

### Contributed papers are solicited in the following areas:

- ◆ Fundamental studies in epitaxy
- ◆ Semiconductor materials, advanced structures and systems
- ◆ Growth of single crystalline materials
- ◆ Surface and interface properties of semiconductor/electrolyte junctions
- ◆ Nanomaterials and heterostructures
- ◆ Overlayers, underlayers, and the like
- ◆ Modeling and simulation of semiconductors, interfaces and transport processes
- ◆ Short reviews of materials and structures

Application properties may be related, in particular, to wear-, corrosion-, thermal shock-resistance, structural integrity under mechanical and thermal loads, ballistic performance of armor ceramics, particular electrical properties related to fuel cells, insulators, supercapacitors, semiconductors, conductors and sputtering targets, optical transmittance, catalytic properties, permeation of porous structures, and biomedical applications. The papers on the proposed topic will be of interest and importance to specialists from academia, research centers, and industry.

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### MANUSCRIPT SUBMISSION

To be considered for this issue, new and previously unpublished results significant to the development of this field should be presented. If you would prefer to write a review, please submit a short proposal to one of the Guest Editors outlining the review for approval. The manuscripts must be submitted via the *JMR* electronic submission system by **April 1, 2017**. Manuscripts submitted after this deadline will not be considered for the issue due to time constraints on the review process. Submission instructions may be found at [www.mrs.org/jmr-instructions](http://www.mrs.org/jmr-instructions). Please select "Focus Issue: *Jan van der Merwe: Epitaxy and the Computer Age*" as the manuscript type. **Note our manuscript submission minimum length of 6,000 words, with a maximum of 8 figures.** All manuscripts will be reviewed in a normal but expedited fashion. Papers submitted by the deadline and subsequently accepted will be published in the Focus Issue. Other manuscripts that are acceptable but cannot be included in the issue will be scheduled for publication in a subsequent issue of *JMR*.

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CALL FOR PAPERS

Submission Deadline—May 1, 2017



## Mechanical properties and microstructure of advanced metallic alloys— in honor of Prof. Hael Mughrabi

Understanding the correlation between the microstructure and the mechanical behavior of materials has always been one of the key challenges in materials science. This is the case in particular for cyclic deformation behavior, creep properties, and high temperature behavior. Recent years have seen significant progress in these fields through the widespread use of new microscopic techniques such as focused ion beam, high resolution TEM, nanomechanical testing approaches, atom probe microscopy, *in-situ* testing, and multiscale simulations.

Contributions by Prof. Hael Mughrabi, who will turn 80 in 2017, have been key to the development of these fields. His seminal contributions in understanding fatigue mechanisms and to the new field of very high cycle fatigue are particularly well-known. The fatigue behavior of ultrafine-grained materials was another focus of his interests. Mughrabi also made significant advances in the field of high temperature materials, where his work to an improved understanding of the influence of the lattice misfit and raft formation process. To honor Hael Mughrabi's long lasting contributions in materials research, manuscript submissions are invited particularly in the following fields:

- ◆ Cyclic deformation behavior and fatigue mechanisms including the VHCF regime
- ◆ Deformation behavior of high-temperature materials as for example TiAl alloys, Ni and Co-based superalloys and coatings
- ◆ Mechanical behavior of nano, ultrafine-grained, and nanolamellar materials

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Submission Deadline—June 1, 2017



## Early Career Scholars in Materials Science 2018

The third annual *JMR* Issue to promote outstanding research  
by future leaders in materials science

This third special issue invites full length research and review articles by materials researchers, who have completed their Ph.D but not yet achieved full professorship at the time of submission, for peer review and publication in the January 2018 issue. Ph.D students are not eligible to submit. The Annual Issue provides a unique opportunity to be highlighted and promoted early in one's research career. To increase attention to these papers, this issue will be published on an **open access** basis. Although some papers may have multiple authors, only the Early Career Scholar submitting the paper will be identified with a photo and brief bio when the paper is published. Authors from around the world are invited to submit papers that span the topical coverage of *JMR* including advanced ceramics, metals, polymers, composites, and combinations thereof related to energy, electrical, magnetic, optical, and structural properties and related applications, and reporting on:

- ◆ Advanced characterization methods and techniques
- ◆ Computational materials science when coupled with experimentation
- ◆ Fundamental materials science
- ◆ Interfacial science as relates to material process understanding and improvements
- ◆ Material property enhancements through advances in materials processing
- ◆ Material property enhancements through material design (especially Materials Genome-related)
- ◆ Material combinations and design that improve system performance
- ◆ Nanoscience and nanotechnology

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**Papers must be accompanied by a photo (uploaded separately as a high resolution TIF or EPS file) and 200-300 word bio of the Early Career Scholar only. These materials must be submitted along with the original submission of the paper.**

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