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978-1-107-41187-6 - Nanostructured Interfaces

Edited by Juergen M. Plitzko, Gerd Duscher, Yimei Zhu and Hicleki Ichinose

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PREFACE

As we already know from manifold investigations in materials science, relevant macroscopic properties depend, by and large, on internal surfaces. Remarkably, nanostructured materials consist of more than half of their volume of interfaces. Therefore, a deeper understanding of the fundamental properties of materials in these dimensions can only be accessed by suitable characterization and investigation techniques, which allow us to research these nanostructured interfaces.

Even though the processing of nanostructured materials has advanced enormously over the last few years, the basic nature of interfaces and their influence to properties remains elusive. For example, the adhesion and passivation of nano-assemblies, which are crucial for applications, are currently not well understood.

This symposium, "Nanostructured Interfaces," held April 2–4 at the 2002 MRS Spring Meeting in San Francisco, California, focused primarily on the basic science of interfaces in nanostructured materials, emphasizing the characterization at the atomic level. Papers focusing on experimental investigations, utilizing transmission electron microscopy (TEM) and analytical electron microscopy (AEM), such as energy filtered TEM (EFTEM) and electron energy loss spectroscopy (EELS), are part of this proceedings volume as well as advanced theoretical studies on various nanostructured materials. The synergetic effect by the combination of experimental and theoretical studies is beautifully shown, and the importance of continuative theoretical studies is accentuated, as well as the demand for applications of localized characterization techniques at nanostructured interfaces.

To conclude, we would like to take the opportunity to gratefully acknowledge support by JEOL Ltd. Tokyo, Japan and the Lawrence Livermore National Laboratory, California, U.S.A.

Juergen M. Plitzko
Gerd Duscher
Yimei Zhu
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