



Institute of Metallurgy and Materials Science  
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## LECTURE NOTES

# **AMAS-ISN Workshop on Fundamentals of Intermetallics, Metal-Ceramic Composites and Functionally Graded Materials**

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Co-ordinated by the Institute of Fundamental Technological Research  
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## Foreword

The processing, characterization, modelling and application of microstructural composite materials are the cutting edge of modern research in materials science and technology. The International Scientific Network devoted to Advanced Materials and Structures (AMAS-ISN), coordinated by the Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, has recently contributed to the formation of the large-scale international Network of Excellence *Knowledge-based Multicomponent Materials for Durable and Safe Performance* (KMM-NoE). The activity of this network is focused on the following material families: intermetallics, metal-ceramic composites and functionally graded materials.

Therefore, the Institute of Metallurgy and Materials Science, Polish Academy of Sciences, Cracow, and the Institute of Computer Methods in Civil Engineering, Cracow University of Technology have decided to organize a short tutorial on the technology and properties of the selected materials with microstructure as well as on the employed experimental techniques. The aim of the workshop is thus to review the fundamental knowledge about Intermetallics (IM), Metal-Ceramic Composites (MCC) and Functionally Graded Materials (FGM). In particular, the tutorial is addressed to doctoral students and employees of member institutions of AMAS-ISN who are not specialists in the field. The meeting is also expected to bring together researchers active in the specified subfields of materials science and encourage their future cooperation.

The workshop will take place at Cracow University of Technology on November 26, 2004 and at the Institute of Metallurgy and Materials Science on November 27, 2004. This monograph contains lecture notes made available by the experts invited to give talks. The organizers express their gratitude to all lecturers for their willingness to contribute to the workshop. It is acknowledged that the workshop is fully financed by AMAS-ISN funds obtained from the Polish Committee for Scientific Research within grant no. SPB/MSN/T-08/DZ 501/2002-2004.

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