

Scientific Report

Marie Curie Summer School on Knowledge based Materials 2006

Polyphase and Composite Materials

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Summer School Participant:

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The general aim of the summer school on Polyphase and Composite Materials, held in Älvdalen, 2006, was to bring together multi-disciplinary material scientists in all stages of their career to discuss scientific and administrative topics on material sciences.

The first day of the summer school was spent to some extent to the logistics of the summer school and to find an integration of technical terms used in all disciplines.

On this base it was comfortable to get into contact with the other participants. Relevant studies that dealt with either general or specific topics in the field of metallurgy, ceramics and geology were presented and discussed in the following days. The organizers cared for adequate discussion times in between the lectures and therefore encouraged fruitful contacts and valuable discussions. The lecturers should be acknowledged for their motivation to get in contact with the students and for being disposed to answer each question extensively and adapted to the student's knowledge.

The second day's lecture can be summarized under the title "Phase boundaries in composites". The lectures dealt with advanced insights on this topic but the speakers kept in mind that not all students had the same stage of knowledge and therefore it was informative for all of us.

A field trip, which was held on the third day of the summer school, was attractive for two reasons. First, scientists working in the field of metallurgy and ceramics had the chance to recognize that the raw materials they work with are of natural source and why geological research is strongly related to their scientific field, and secondly, first contacts were deepened and ongoing discussions were encouraged.

The topic of the fourth day was material characterisation with help of advanced imaging and analysis techniques. Those techniques are used in all relevant scientific disciplines and therefore it was useful for each participant to acquaint himself with the recent developments. On the fifth day the participating PhD students and Postdocs have had the opportunity to present their own scientific results in form of a poster. The conference room provided enough space and, as almost the whole day was spent on the presentation, it was a comfortable way to get into discussions.

The sixth day of the summer school was spent on the application of composite materials to industrial purposes. The talks gave a detailed overview on research, processing and production. From my point of view it is very necessary, especially if the respective research is located in the broader field of natural sciences, to keep relation to the appliance of the

materials. According to that, a session like this was excellently placed to this stage of the summer school.

The seventh day was mainly spent on career management and scientific communication. After several lectures that dealt with topics a scientist has to cope with beyond scientific work (as e.g. proposal writing and building on communication skills), groups were formed that discussed related topics. As the organizers looked after having people at each stage of career within the groups, the discussions turned out to be very fruitful from the scientific and social point of view.

The lectures held on the eighth day gave an overview on the latest developments in modelling techniques. This session was topped off with a computer lab, where each participant had the opportunity to test his own skills in numerical modelling. As models like this are included in my PhD project, I had a great enrichment at this day.

The lecture at the ninth day of the summer school showed a composition of application fields that are related to all scientific areas that participated and again it was a good integration of the three research areas: ceramics, metallurgy and geology. On the last day the organizers asked for a final discussion on the summer school logistics, which was accepted enthusiastically. For me, being at the very beginning of my PhD project, this summer school was of great value. I learned a lot of new aspects concerning research, interdisciplinary work and communicational skills. Place and extent of the event were carefully selected by the organizers and I cannot report to any negative aspects related to the logistics or scientific performances. I am really encouraged to build on the contacts I have now to scientists in my research area and especially to those from other disciplines. I would like to thank ESF very much for giving me the chance to attend to this summer school.

Joyce Schmatz