

# Scientific report of **Polimorphism in condensed matter**

## **Scientific Coordinators:**

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The main focus of the conference was to bring together scientists working with different methods on colloidal as well as metallurgical model systems, with the goal to achieve meaningful advances resulting in a more detailed understanding of heterogeneous nucleation and successive microstructure growth kinetics in general. For both model systems this concerned also a precise understanding of the interconnection of structure- and phase dynamics. From an experimental point of view the parameters which quantify the nucleation and growth kinetics can be measured more easily in colloids than in metallic melts, so that the question of how far colloids can serve as model systems for metallic systems is quite a relevant one in accessing key data for theoretical models (such as the interface energies as well as the kinetic and capillar anisotropies of an interface between coexisting phases). From a theoretical point of view the work on a detailed understanding of the nucleation kinetics of metallic systems as well as of colloids leads to the question how sustainable multi-scale descriptions of such structure-formation processes based on the interplay between phase separation and nucleation/crystallisation in multi-phase systems may be obtained, which therefore was a key issue amongst the participants.

The workshop encountered great international response with well-known speakers coming from Harvard (D. Weitz and F. Spaepen) and Cambridge (L. Greer), as well as (a.o.) further established experts on phase-field such as A. Karma, L. Granasy and A. Wheeler and on molecular dynamic simulations as D. Frenkel and J. van der Eerden. Moreover, quite a few young talented and already well-known speakers as J. Horbach, M. Plapp, T. Schilling and P. Schall established a stimulating, high quality scientific standard for the discussion also amongst the young researchers. In spite of the dense program there was still a good amount of time for this due to two long, well-visited poster evenings.

In that sense it may be concluded that the interdisciplinary material systems-, methods and scales-bridging dialogue and understanding as first step to true cooperation to tackle the above questions could be established and can be seen as the success of the workshop - also according to the response of the participants.