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The Workshop “Controlling Phase Separation in Electronic Systems- COPSES2008” was the final event of the European research project CoMePhS (Controlling Mesoscopic Phase Separation). The aim of the project was to achieve functionality of the mesoscopic textured states in certain compounds by manipulating the phase separation. A variety of substance classes fall under this project with the majority found in the transition metal oxides. These—on the other hand—are related to superconductivity, magnetoresistent materials, charge transfer insulators, ferroelectrics, and magnetic compounds. The coexisting phases in those compounds may form robust magnetic, electronic, and crystallographic textures at “mesoscopic” length scales. The interplay between the different ground states results in a novel complexity, which can be tuned and engineered through layer-by-layer tailoring, alloy formation, and doping.

During the conference the above topics and materials were addressed and are presented in the proceedings. The role of the interplay between spin, charge, and lattice degrees of freedom plays a major function and has been shown to adopt complex character, if charge and orbital ordering are additionally considered. Special emphasis has been devoted to cuprate and manganese oxides since there is no consensus yet about the microscopic origin of their complicated phase diagrams. However, it could be elaborated that purely electronic models miss essential physics of both material classes. Lattice and orbital ordering effects trigger in a subtle way their ground state properties.

The beautiful location of the conference venue contributed substantially to a relaxed and friendly atmosphere, enhanced the interactive discussions and promoted the success of this event, which is mirrored in these proceedings.

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