

Preface

“Solvothermal” processes can be defined as chemical reactions occurring in a closed system in the presence of a solvent above its boiling temperature. Under these conditions an autogeneous pressure is developed, and a variety of products are formed which are often not accessible, or not accessible in the same quality, under standard conditions. Originally, due to the prevalence of water as the solvent in geological processes, the term “hydrothermal” had been used in the Earth Sciences and later for pressurized laboratory and industrial systems with water as the reaction medium.

In the course of the last two decades, solvothermal processes have been developed in various domains of fundamental and applied scientific research for a large variety of substrates and solvents. Many of the new techniques have already become an integral part of industrial production of materials with special functional properties because they offer many advantages over conventional processes regarding in particular energy consumption and environmental safety.

This special issue of *Zeitschrift für Naturforschung B, Chemical Sciences*, presents a selection of scientific contributions to this emerging field which illustrate through different examples the great synthetic scope and potential of solvothermal processes. These examples include, *i. e.*, the preparation of novel materials (organic, inorganic and hybrid), the shaping of materials through modified crystal growth (at the macro- or nanoscale), the synthesis of nanoparticles, and the development of low-temperature sintering methods. In addition, the impact of the associated technologies, such as microwave irradiation, *etc.*, is also addressed.

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