

Materials, Inorganic Chemistry

TRENDS IN MATERIALS SCIENCE

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Concepts, phenomena and transformations involved in making, using and understanding materials such as metals, ceramics, semiconductors, plastics and composites are strikingly similar and apply to a variety of different materials which at first sight are quite unrelated. This has given birth to MATERIALS SCIENCE, which has by now become a discipline in its own right as well as being a meeting place of constituent disciplines. However, most exciting are materials which combine unique properties of matter: Liquid crystals, metallic glasses, ferromagnetic semiconductors, conducting polymers and superconducting ceramics.

The trends in Materials Science are influenced by intellectual and application oriented motivations. Material Scientists would like to discover the extreme and ultimate properties of matter. In the future there will be new demands from key technologies such as computers, telecommunications, robotics, sensors, electronics, nanotechnology Lasers, biotechnology, environmental science, energy technique and aerospace industry.

This contribution covers examples which are related to the scope of this 'Symposium on Chemical Thermodynamics, Calorimetry and Thermal Analysis'. Recent highlights are: High T_C superconductors, molecular beam epitaxy, metallic glasses from refractory metals, atomic probe techniques such as tunnelling and force microscopy, and nanometer scale structures created by local heating using a scanning tunnelling microscope.

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