Intermetallics – Synthesis, Production, Properties

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This work summarizes recent results in the field of intermetallics achieved during the research in our department. The research was focused on high temperature materials, shape memory alloys and hydrogen storage materials. In the case of high-temperature intermetallics, the development of TiAl-Ti_5Si_3 and NiAl-Al_2O_3 composites and Fe-Al-Si based alloys is described. During this research, powder metallurgy using reactive sintering has been established as an innovative and promising method for easy preparation of these materials. This method is also currently being tested and optimized for NiTi shape memory alloy. Another important property of several intermetallics (as $LaNi_5$ or Mg_2Ni) is the ability to store hydrogen reversibly.

Keywords: intermetallics, production, properties

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