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STEM Characterization of Metal Clusters In/On Oxides

By Shareghe Mehraeen

LAP Lambert Academic Publishing Feb 2013, 2013. Taschenbuch. Book Condition: Neu. 220x150x8 mm. Neuware - Dispersed metal clusters in or on a support matrix are key phenomena in many technological fields. Two widely used examples of them are supported-metal clusters in heterogeneous catalysts and transition metal clusters in diluted magnetic semiconductors (DMS). The catalytic activity and selectivity of catalysts depend sensitively on structure parameters like particles size and shape. With the same analogy, the magnetic properties of DMS oxides are sensitively related to the crystal defects of the host material as a consequence of doping the metal. Therefore it is essential to understand the correlation between nanostructure and function of the materials. Z-contrast imaging is the best candidate for the related study because of a high degree of resolution it provides and the unique ability it offers to detect and differentiate the clusters and oxide matrix due to the difference their atomic numbers. Moreover the development in the STEM field fosters the conjugation of Electron Energy Loss Spectroscopy (EELS) and Z-contrast imaging and their widespread use for nearly atomic level chemical analysis at interface, second phases, and isolated defects. 140 pp. Englisch.



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