Fakultät für Chemie

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Titel des Beitrags:
Acetylene polymerization on supported transition metal clusters

Abstract:
A review. The polymn. of acetylene, studied exp. and theor. on nano catalysts consisting of nanoscale clusters of different size and elemental compn., is reviewed. As on bulk systems palladium is the most active transition metal for this reaction. More important, however, is the changing selectivity as function of size and elemental compn. As an example, palladium atoms, dimers, and trimers, as well as nanoscale copper clusters are highly selective for the cyclotrimerization reaction. In the case of palladium, the ð-bonding of acetylene and a charge transfer from the substrate to the atom/cluster are responsible for the high selectivity. In addn. calcns. revealed the whole reaction path of this reaction on palladium atoms and it could be shown that in contrast to bulk systems the rate-detg. step is the formation of benzene from the Pd(C4H4)C2H2 complex. [on SciFinder(R)]

Stichworte:
Cyclotrimerization Electron transfer Nanoparticles ð bond Polymerization catalysts (acetylene polymn. on supported transition metal clusters) Cluster compounds Transition metal complexes Role: CAT (Catalyst use), PRP (Properties), USES (Uses) (acetylene polymn. on supported transition metal clusters) Dimers Trimmers Role: FMU (Formation, unclassified), FORM (Formation, nonpreparative) (acetylene polymn. on supported transition metal clusters) review acetylene polymn palladium nano catalysis
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