

Title (en)
SUPPORTED SOLID SUPERACID CATALYSTS AND METHOD FOR MAKING THEM

Title (de)
FESTE SUPERSÄURE TRÄGERKATALYSATOREN UND VERFAHREN ZU IHRER HERSTELLUNG

Title (fr)
CATALYSEURS SOLIDES DU TYPE SUPERACIDE SUR SUPPORT ET PROCEDE POUR LES FABRIQUER

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Application
EP 96940501 A 19961118

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Abstract (en)
[origin: WO9718892A1] This invention provides supported solid superacid catalysts composed of anion-modified oxides/oxyhydroxides of Group IV metals such as hafnium (Hf), tin (Sn), titanium (Ti) or zirconium (Zr), precipitated onto a metal oxide support such as alumina, silica or mixtures thereof having initial surface area of 100-500 m²/gm, and is anion modified by addition of molybdate (MoO₄), phosphate (PO₄), selenate (SeO₄), sulfate (SO₄), or tungstate (WO₄). The catalyst further includes an active promoter base metal such as Co, Ni and Pd or a noble metal such as Pt, Rh, and Ru to improve the catalyst stability against deactivation. These supported solid superacid catalysts are prepared by precipitation of hydroxides of Group IV metal onto the support material, followed by the anion-treatment, addition of the stabilizing promoter metal, and calcination at 500-650 DEG C temperature. Typical supported solid superacid catalysts have a composition of 70-90 wt.% support material, 5-20 wt.% active transition metal oxide, 4-8 wt.% of the anionic group, and 0.05-5 wt.% of the active stabilizing base or noble promoter metal additive. The resulting catalysts have high final surface areas of 100-450 m²/gm, and provide high catalytic activity for various alkylation and hydrocarbon conversion reactions, such as alkylation of refinery gas for producing high-octane gasoline, cracking and hydroisomerization of long chain paraffins, and conversion of waste plastics and low quality oils waxes to produce value-added lubricating oils and chemicals.

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