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过渡元素掺杂对纳米**TiO_2**光催化剂性能的影响

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摘要 以沉淀法制备得到了第一过渡系23至30号元素(V, Cr, Mn, Fe, Co, Ni, Cu, Zn)分别掺杂的纳米TiO_2光催化剂。考察了它们光催化降角水中十二烷基苯磺酸 钠的活性，研究了它们的光催化活性与催化剂微晶结构、电子亲和势与离子半径比 、离子的磁矩之间的关系。发现其催化活性的变化与这些元素的稳定氧化态的电子亲和势与离子半径的比值和掺杂原子的磁矩具有较好的相关性。而催化剂的（101 ）晶面的XRD衍射强度、微晶尺寸和晶格畸变应力对催化活性也具有一定的影响。

关键词 二氧化钛 掺杂 光催化 烷基苯磺酸盐 催化活性

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Influence of Transition Elements Dopant on the Photocatalytic Activities of Nanometer TiO_2

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Abstract A series of nanometer TiO_2 photocatalysts doped respectively by elements with atomic number from 23 to 30 were prepared. Their photocatalytic activities in photodegradation of sodium dodecyl benzene sulfonate were measured. The relationships between the activities and microcrystallite structure of the catalysts, the ratio of electronic affinity to ionic radius of doped atom and ionic magnetic moment of doped atom were studied. It is found that the catalytic activity correlats well with the ratio and magnetic moment. The X-ray diffraction intensity, microcrystallite size, and micro- strain of (101) crystal face of the catalysts had a certain influence on the catalytic activity.

Key words TITANIUM DIOXIDE DOPE PHOTOCATALYSIS ALKYLBENZENESULFONIC ACID CATALYTIC ACTIVITY

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