Journal of Physics: Conference Series 2017 vol.789 N1

Application of low pressure capacitively coupled rf hydrogen plasma for low temperature reduction of iron clusters in structure of fe-pillared materials

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Abstract

© Published under licence by IOP Publishing Ltd. The unique properties of pillared materials determine their use in catalysis, purification and separation. The paper studies the reduction of composite catalysts, Fe-pillared materials. The authors compare their reduction in low temperature capacitively coupled RF hydrogen discharge of low pressure to their conventional direct hydrogen reduction in a tubular muffle furnace. X-ray diffraction analysis was used to characterize the iron-bearing phases. The results show that the reduction of iron hydro/oxide clusters associated with an aluminosilicate matrix to metallic iron is very challenging due to the degree of the pore space availability for hydrogen.

http://dx.doi.org/10.1088/1742-6596/789/1/012057

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