ENHANCED PHOTOREDUCTION OF N_2 ON CLAY SUPPPORTED IRON OXIDE CATALYSTS

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Photoreduction of N_2 by visible light on colloidal ferric oxide was earlier reported[1]. The activity of this catalyst is attributed to the chemisorption of nitrogen and increased surface area. However the catalytic activity rapidly decreases owing to the formation of nitrate and the subsequent altering of the flat band potential positions of the ferric oxide particles.

When colloidal ferric oxide is supported on layer silicates such as Fuller's earth to form 'Pillared' structures the NH_3 yield is enhanced by a factor of ca.4 and the activity remained for a greater length of time. The enhanced activity of this system is explained on the basis that no nitrate formation was observed in this case.

Reference

Tennakoon, K., Wickremanayke, S. Fernando, C.A.N.
Ileperuma, O.A. & Punchihewa S. (1987) Chemical Communications) (accepted for publication).