

**A study of enhanced photocatalytic activity by EFAL removed TiO<sub>2</sub>/Y-zeolite used for solar energy conversion processes.**

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The photocatalytic activity was enhanced using modified form of TiO<sub>2</sub>/Y-zeolite. It was synthesized by the incorporation of TiO<sub>2</sub> into the cavities of Y-zeolite, removing extra-framework aluminum (EFAL) by steaming Y-zeolite with nitric acid. The photocatalytic reduction of methyl orange was observed in the presence of the modified TiO<sub>2</sub>/Y-zeolite and the normal TiO<sub>2</sub>/Y-zeolite, and the photoreduction rates are found to be  $1.69 \times 10^{-6}$  and  $2.07 \times 10^{-7}$  respectively. It means that the photocatalytic activity of modified TiO<sub>2</sub>/Y-zeolite is eight times higher than the normal TiO<sub>2</sub>/Y-zeolite. Hence this new photocatalyst was found to be good for solar energy conversion processes and for environmental cleaning.