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## The role of lanthanides in TiO<sub>2</sub>-based photocatalysis: a review

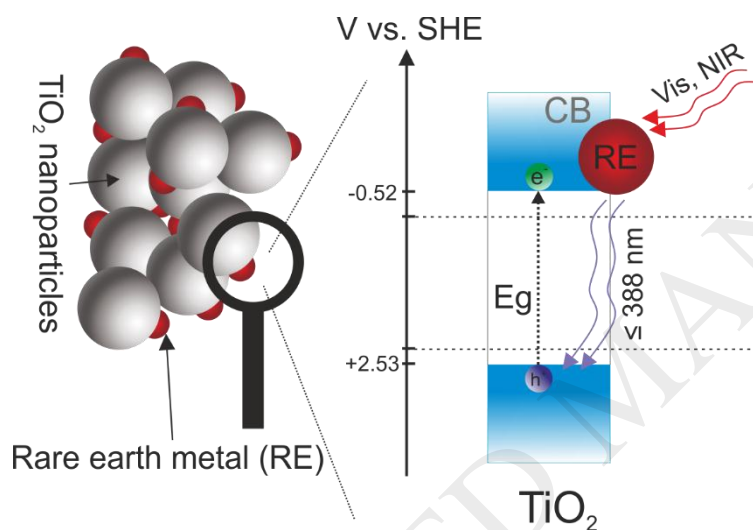
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### Graphical abstract



### Highlights

- Lanthanides-titania-modified semiconductor photocatalysts (Er-, Ho-, Nd-, Tm-TiO<sub>2</sub>)
- Influence of up-conversion process on the photocatalytic activity of RE-TiO<sub>2</sub>
- First-principles computer simulations of RE-TiO<sub>2</sub> structure and energy

### Abstract

This review provides an in-depth analysis of lanthanide-titania-modified semiconductor photocatalysts (Er-, Ho-, Nd- and Tm-TiO<sub>2</sub>) for the photocatalytic degradation of organic pollutants under UV and visible light irradiation. In the first section, the unique properties of

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