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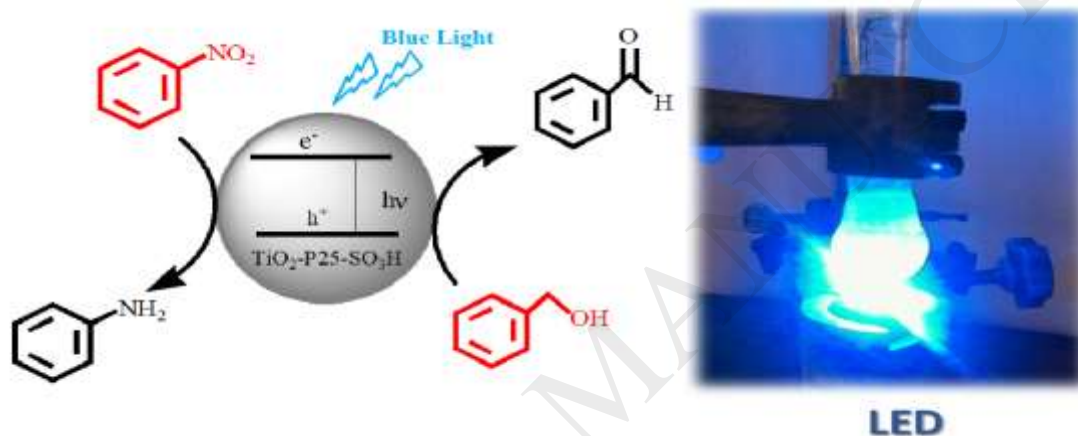
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## Nano-TiO<sub>2</sub>-P25-SO<sub>3</sub>H as a new and robust photo-catalyst; the acceleration effect of selective oxidation of aromatic alcohols to aldehydes under blue LED irradiation

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### Graphical abstract



### Highlights

- Nano-TiO<sub>2</sub>-P25-SO<sub>3</sub>H was introduced for the first time as a covalently grafted solid acid.
- Nano-TiO<sub>2</sub>-P25-SO<sub>3</sub>H was employed as a novel heterogeneous photo-catalyst.
- Selective photo-oxidation of aromatic alcohols to aldehydes occurs with high conversion using simple blue LED.
- Reusability of photo-catalyst was proved at least five times without suffering any significant drop in activity.

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