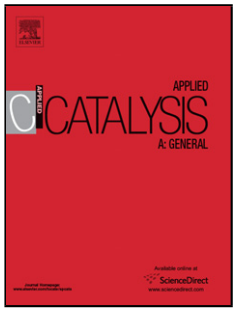

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Photocatalytic synthesis of vanillin using N-doped carbon nanotubes/ZnO catalysts under UV-LED irradiation

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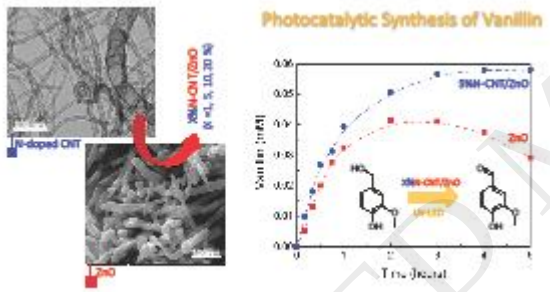
Graphical abstract



Highlights

- N-doped CNT/ZnO materials are efficient photocatalysts for vanillin production.
- N-doping improves CNTs' electron availability and mobility in CNT/ZnO hybrids.
- The best performance, in yield and selectivity, was obtained using 5%N-CNT/ZnO.
- N-CNT act as photosensitizer and as e^- scavenger for ZnO, inhibiting recombination.