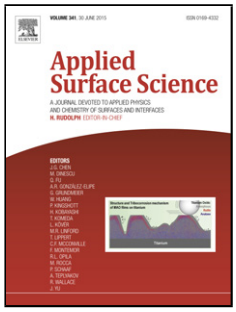

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Core-Shell $SrTiO_3$/Graphene Structure by Chemical Vapor Deposition for Enhanced Photocatalytic Performance

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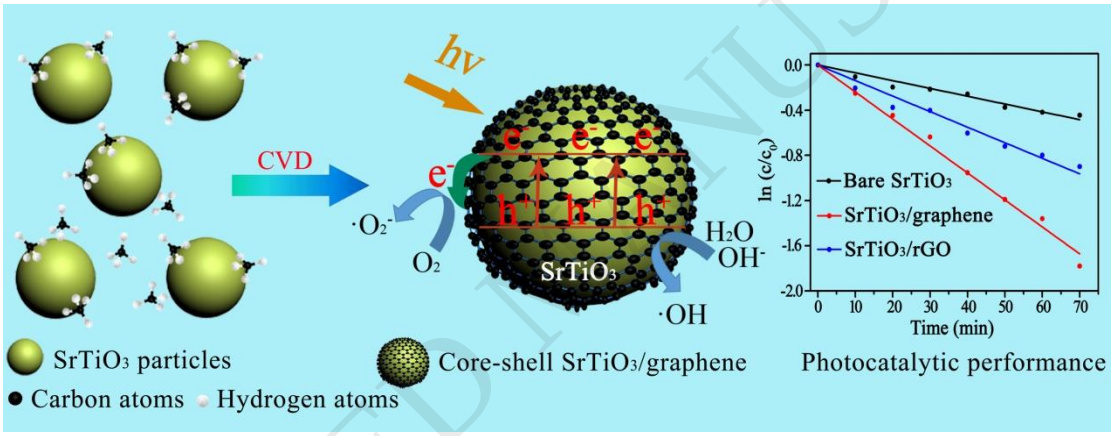
GRAPHICAL ABSTRACT



Highlights

- Core-shell $SrTiO_3$/graphene is synthesized *via* chemical vapor deposition method.
- Core-shell $SrTiO_3$/graphene shows enhanced photocatalytic performance.
- High-quality graphene boosts the separation of photo-excited charge carriers.
- Ti-C chemical bond works as a passage for the electron migration.

Abstract:

Direct growth of high quality graphene on the surface of $SrTiO_3$ (STO) was realized through chemical vapor deposition (CVD), to construct few-layer 'graphene shell' on every STO nanoparticle. The STO/graphene composite shows significantly enhanced UV light photocatalytic activity compared with the STO/rGO reference. Mechanism analysis confirms the role of special core-shell structure and chemical bond (Ti-C) for rapid interfacial electron transfer and effective electron-hole separation.

Keywords: Graphene, $SrTiO_3$, photocatalyst, Chemical Vapor Deposition