

# Graphene/silver-based Composites and Coating on Coral for degradation of Organic Pollution using the Z-scheme Mechanism

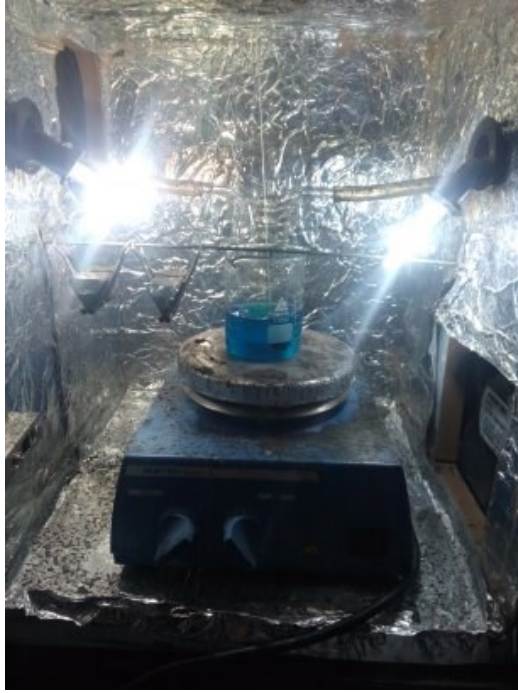
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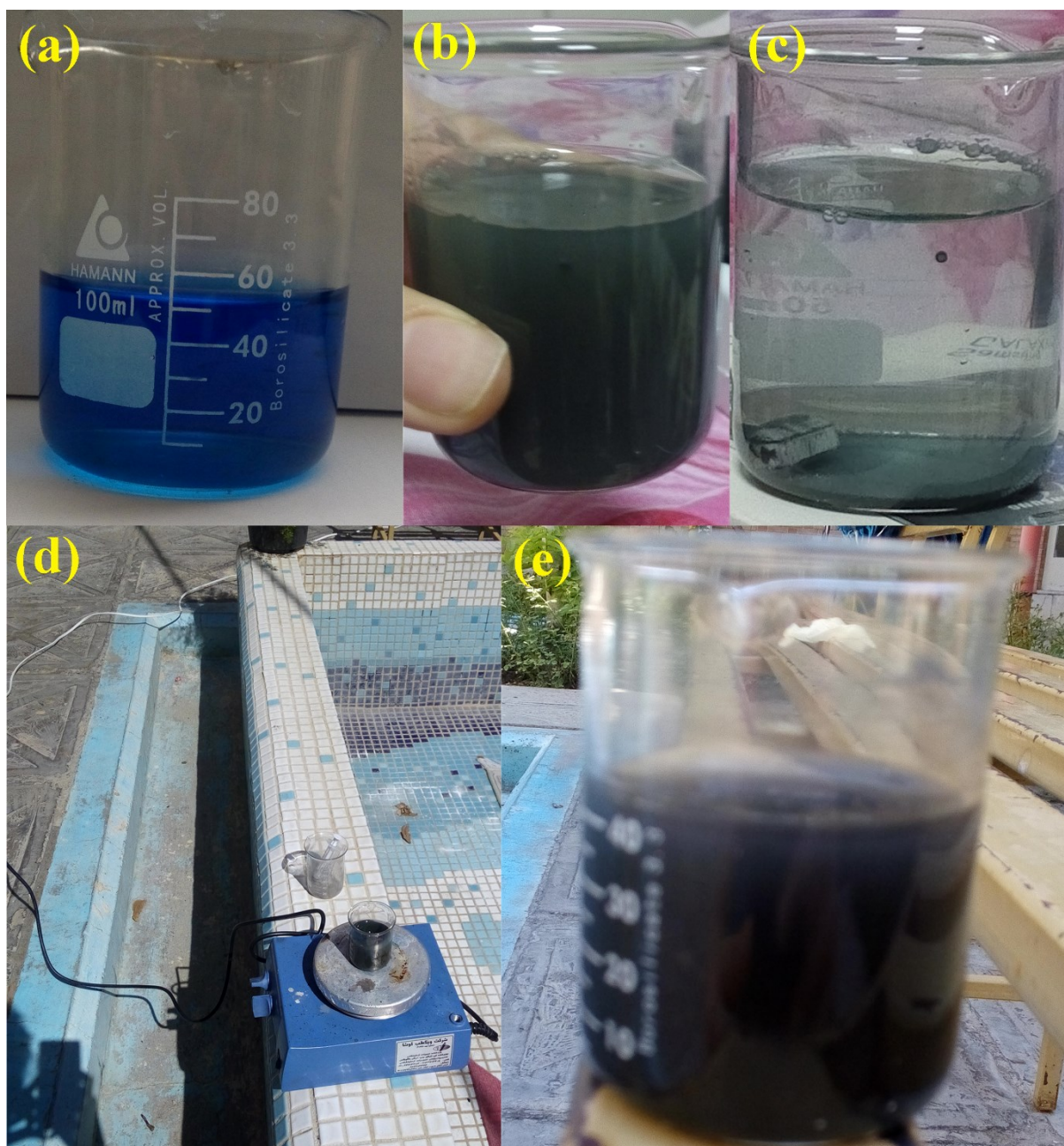
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## Materials

In order to synthesize graphene oxide, graphite (325 mesh), sulfuric acid ( $\text{H}_2\text{SO}_4$ , 98%), ortho-phosphoric acid ( $\text{H}_3\text{PO}_4$ , 85%), hydrochloric acid (HCL, 20%), hydrogen isopropoxide ( $\text{H}_2\text{O}_2$ , 33%), deionized water (distilled water) were purchased from Iran Persian chemical Co, Iran. In order to synthesize the composite and test the photocatalytic degradation, potassium permanganate ( $\text{KMnO}_4$ ), silver nitrate ( $\text{AgNO}_3$ ), disodium hydrogen phosphate dodecahydrate ( $\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O}$ ), methylene blue ( $\text{C}_{16}\text{H}_{18}\text{ClN}_3\text{S}$ ), and ethanol were used in analytical grade from Merck company (Germany). The reduced graphene oxide was employed in research-grade (United Nanotech Innovations PVT. LTD).



**Fig.S1.** Lamp housing system.



**Fig.S2.** Adsorption and degradation steps in C2 (RGO/GO/Ag<sub>3</sub>PO<sub>4</sub>/Ag) sample, (a) MB, (b) adsorption, (c) the simultaneous precipitation of C2 powder and MB in dark medium, (d) Sunlight irradiation on the sample, (e) degradation step.