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# Use of graphite oxide and/or thermally reduced graphite oxide for the removal of dyes from water

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## Abstract

Two types of carbonaceous materials, graphite oxide (GOx) and thermally reduced graphite oxide (TRGO) were tested in the dyes removal from water. Two common synthetic aquatic pollutants, Orange II, an azo dye, and Rhodamine B, a xanthene dye, were selected as probe molecules and their bleaching was evaluated.

We observed that the two materials act in a different way when dispersed in aqueous solution: TRGO acts as a good adsorbent material whereas GOx can be used as an efficient photosensitizer.

Dye removal is almost complete in the dark in the presence of TRGO and within few minutes a steady-state concentration was achieved. On the contrary, in the case of GOx, adsorption is limited to almost 10%-20% for both dyes, but this material is able to induce dyes photodegradation and almost 80% of the residual dyes are abated within 5 hours of irradiation under simulated solar light. When the graphene derivatives were dispersed in UV-cured acrylic polymeric films, the reduction

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