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Analysis of graphene oxide as an anticorrosive film in metallic materials

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Corrosion is an electrochemical or chemical process that causes the deterioration of materials, especially metallic ones, thereby leading to unpredictable negative consequences. The application of anti-corrosive coatings constitutes a means of minimizing such corrosive effects once these coatings act as barriers between the substrate and the corrosive medium. Graphene oxide is a material that has gained notoriety due to its properties, abundance and to the fact that it is environmental friendly. The work we developed aimed to apply a graphene oxide solution on a metallic substrate in order to verify its applicability as an anticorrosive film. For this purpose, the production of the precursor solution was carried out; the application of the solution was accomplished by the dip-coating technique; then, the immersion test in aqueous corrosive medium followed and the characterization by confocal microscopy was performed. The results showed that there was adhesion of the film to the substrate and that it remained insoluble. As a protective layer for anticorrosion coating, the film responded partially well to this study's proposed objectives because, though it did not manage to slow down the corrosive process, it did minimize the formation of spot corrosion, a more aggressive form of corrosion.

Keyword: graphene oxide solution; anticorrosive protection; corrosion essay.

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