

Using an atomically thin carbon material as anti-corrosive coating

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ABSTRACT

The focus of anti-corrosive coatings used in industry is always to protect the coated material but never the environment in which it is used. The coatings that is used in some drinking water pipes are not bio-compatible and are potentially releasing heavy ions into the water which can cause allergic reactions and diseases. The pure, atomically flat carbon material graphene has recently shown great promise as a barrier against metal corrosion in biological environments. In this research proposal it is suggested that graphene should be investigated as an effective corrosion coating on various metals in aquatic milieu. The investigation includes experimentation of growing graphene directly on the metals by using Chemical Vapour Deposition (CVD), testing the robustness of the adhesion between the metal and atomic carbon layers and last but not least to test the bio-compatibility of the coating by measuring the release of particles into an aquatic environment.