

Accepted Manuscript

Synthesis of graphene/epoxy resin composite via 1,8- diaminoctane by ultrasonication approach for corrosion protection

Yue Wu, Ningning Song, Wucong Wang, Yaping Zhao

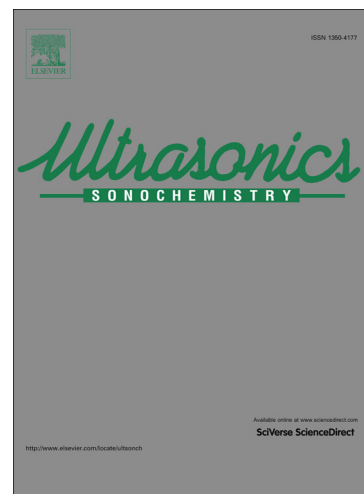
PII: S1350-4177(17)30579-5
DOI: <https://doi.org/10.1016/j.ultsonch.2017.12.012>
Reference: ULTSON 3996

To appear in: *Ultrasonics Sonochemistry*

Received Date: 1 October 2017
Revised Date: 7 December 2017
Accepted Date: 8 December 2017

Please cite this article as: Y. Wu, N. Song, W. Wang, Y. Zhao, Synthesis of graphene/epoxy resin composite via 1,8- diaminoctane by ultrasonication approach for corrosion protection, *Ultrasonics Sonochemistry* (2017), doi: <https://doi.org/10.1016/j.ultsonch.2017.12.012>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Synthesis of graphene/epoxy resin composite via 1,8- diaminoctane by ultrasonication approach for corrosion protection

Yue Wu, Ningning Song, Wucong Wang, Yaping Zhao*

School of Chemistry and Chemical Engineering, Shanghai Jiao Tong University, 800

Dong Chuan Road, Shanghai 200240, PR China

Abstract

In this work, the preparation of the graphene/epoxy resin composite and its corrosion protection on the copper substrate were presented. The 1,8-diaminoctane-grafted-graphene (1,8-D-g-G) was synthesized using the carboxyl functional graphite and 1,8-diaminoctane by a one-pot process under ultrasonication in supercritical CO₂. The structure and morphology of the as-prepared samples characterized by FTIR, XPS, TEM, AFM, and SEM confirmed that the graphite was exfoliated into the graphene and the latter reacted with the 1,8-diaminoctane via amidation to form the 1,8-D-g-G. The graphene/epoxy resin composite was readily achieved by the reaction of the epoxy resin with the 1,8-D-g-G. The electrochemical and salt spray tests were applied to assess the corrosion protection of the composite coating on the copper substrate. The results demonstrated that the composite exhibited excellent corrosion protection. Also, the mechanism of the co-occurred exfoliating process and the amidation reaction in one-pot under ultrasonication in supercritical CO₂ was explored.

Keywords: graphene, epoxy resin, anti-corrosion coating, ultrasonication

1. Introduction

Download English Version:

<https://daneshyari.com/en/article/7703329>

Download Persian Version:

<https://daneshyari.com/article/7703329>

[Daneshyari.com](https://daneshyari.com)