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Jiaming Xu, Dong Zhang

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Pressure-sensitive properties of emulsion modified graphene nanoplatelets/cement composite

Jiaming Xu, Dong Zhang*

Key laboratory of Advanced Civil Engineering Materials, Ministry of Education, School of Materials Science and Engineering, Tongji University, Shanghai 201804, PR China

*Corresponding author, Email: zhangdng@tongji.edu.cn

Abstract

Graphene nanoplatelets/cement composite was prepared using three types of graphene nanoplatelets with different structures. Graphene nanoplatelets(GNP) and emulsion were mixed into cement through the method of mechanical stirring. Electrical performance and the pressure-sensitive properties of GNP/cement composite were studied. The effects of graphene nanoplatelets and styrene-acrylate emulsion on the properties of cement were analyzed. The results show that the addition of graphene nanoplatelets to cement would lead to a significant drop of resistivity and manifest pressure sensitivity. To some extent, it would weak the compressive strength. In addition, the structure of graphene nanoplatelets greatly affects the properties of the GNP/cement composite. A distinct enhancement in pressure sensitivity was found when emulsion was added to GNP/cement composite. The gauge factor of emulsion modified GNP/cement composite reaches a peak value of 7.783, which is 1order of magnitude higher than composite without emulsion. Analysis of above results was given to explain the

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