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# Enhanced toughness and glass transition temperature of epoxy nanocomposites filled with solvent-free liquid-like nanocrystal-functionalized graphene oxide

Peipei Li[a], Yaping Zheng[a,*], Mengzhi Li[a], Ting Shi[a], Dewang Li[a], Aibo Zhang[a]

[a]*School of Natural and Applied Science, Northwestern Polytechnical University, Xi'an 710072, China*

ABSTRACT: A solvent-free liquid-like nanocrystal-functionalized graphene oxide was successfully prepared. Its morphology, chemical structure and multifunction were extensively characterized by various analysis technologies. It was found that the liquid-like nanocrystal-functionalized graphene oxide could flow at room temperature without any solvents and remained magnetic with a saturation magnetization about 2.57 emu/g. Moreover, it exhibited good dispersion in various solvents and polymer matrix. Subsequently, it was incorporated into epoxy matrix to investigate the toughness and glass transition temperature of the resulting nanocomposites. The results indicated that it could simultaneously improve the impact toughness and glass transition temperature of neat epoxy by 138.12 % and 33.05 °C at the 1.0 wt% fraction.

KEYWORDS: graphene oxide; liquid-like behaviour; toughness; glass transition temperature; epoxy nanocomposites

## 1. Introduction

* Corresponding authors. E-mail: zhengyp@nwpu.edu.cn (Yaping Zheng) and lpnwpu@163.com (Peipei Li)