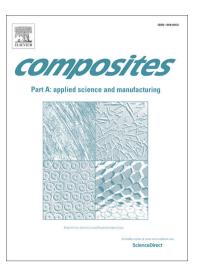
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Functionalized graphene as an effective antioxidant in natural rubber

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ACCEPTED MANUSCRIPT

Functionalized graphene as an effective antioxidant in natural rubber

Lin Zhang^a, Hongqiang Li^{a, b, *}, Xuejun Lai^{a, b}, Xiaofeng Liao^a, Jing Wang^a, Xiaojing

Su^a, Heng Liu^a, Wenjian Wu^c, Xingrong Zeng^{a, b, *}

^a College of Materials Science and Engineering, South China University of Technology,

Guangzhou 510640, China

^b Guangdong Key Lab of High Performance and Functional Polymer Materials, Guangzhou 510640, China

^c School of Environmental and Civil Engineering, Dongguan University of Technology, Dongguan 523808, China

* Corresponding authors: E-mail: hqli1979@gmail.com; psxrzeng@gmail.com

To improve the thermo-oxidative aging resistance of natural rubber, a **ABSTRACT:** functionalized graphene kind of (FGE) prepared by grafting was 2-tert-butyl-6-(3-tertbutyl-2-hydroxy-5-methylphenyl) methyl-4-methylphenyl acrylate (GM) onto graphene oxide (GO) using (3-mercaptopropyl) trimethoxysilane as bridging agent. In comparison to GO, FGE appeared more curled surface and reached the higher water contact angle of 134°. By latex-mixing method, the uniformly dispersed FGE endowed NR vulcanizates with obviously improved thermal stability. Importantly, the NR/FGE nanocomposites exhibitd excellent thermo-oxidative aging resistance, which was attributed to not only the synergistic antioxidative effect of hindered phenol groups

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