

# Enhancing the mechanical and tribological properties of epoxy composites via incorporation of reactive bio-based epoxy functionalized graphene oxide

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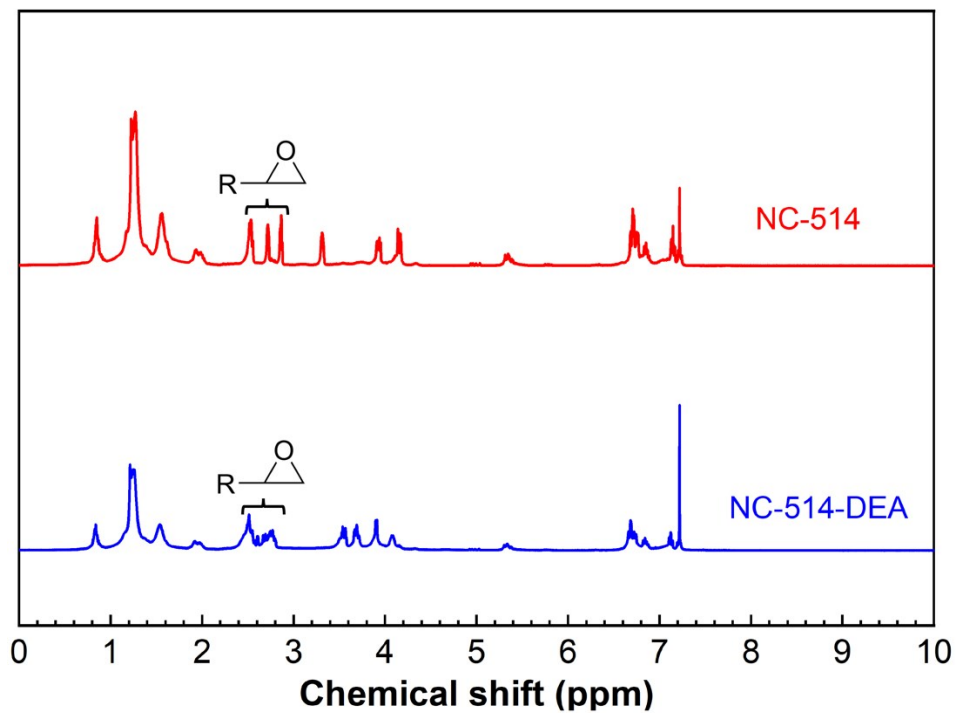
<sup>c</sup> Innovation Academy of South China Sea Ecology and Environmental Engineering,

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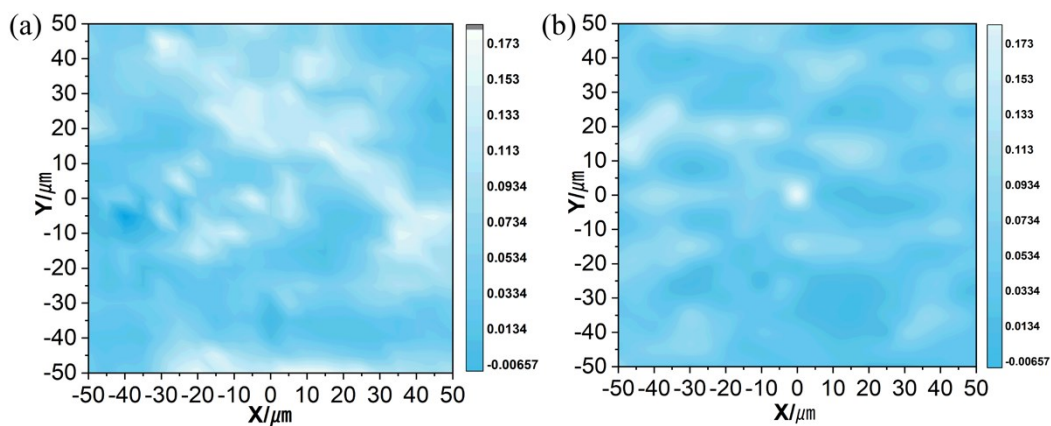
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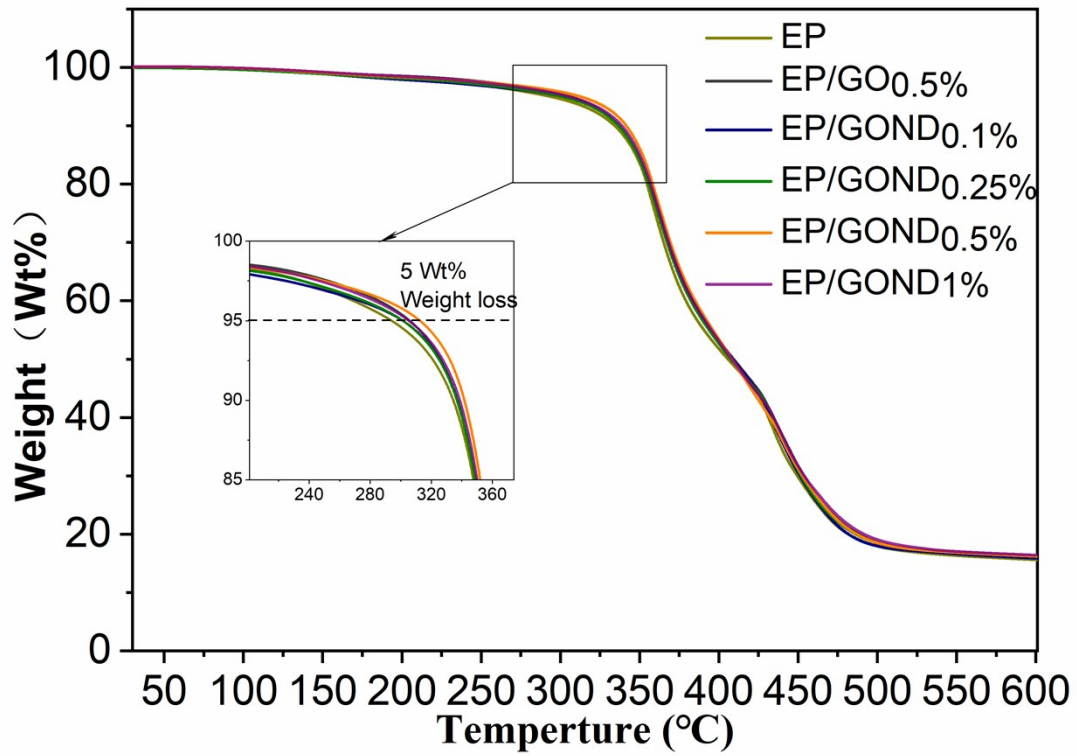
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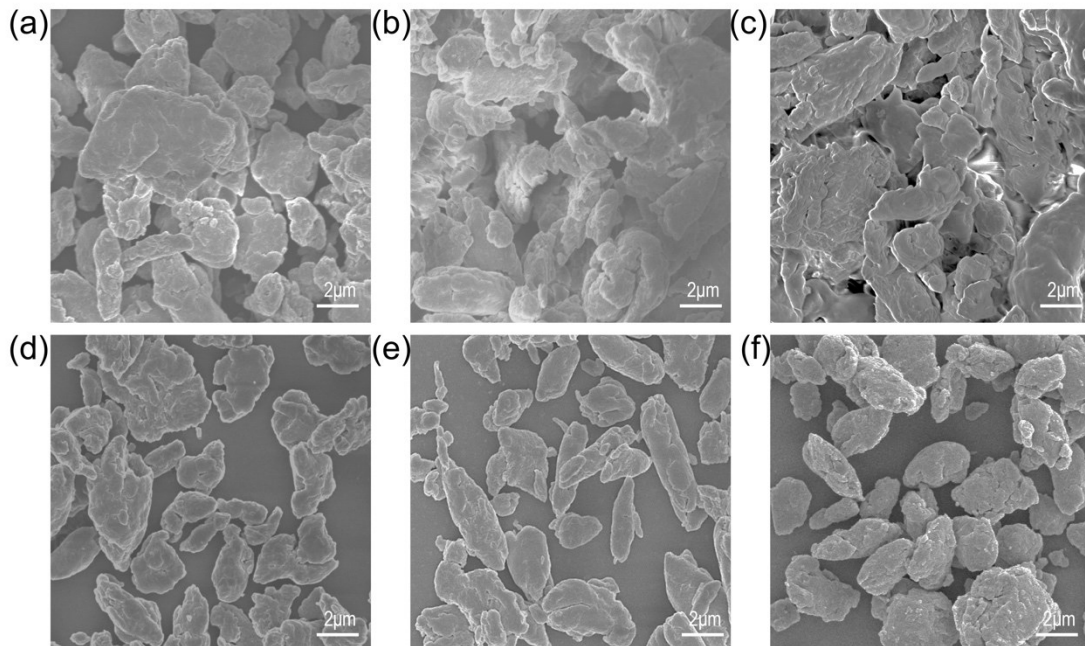
**Fig. S1.**  $^1\text{H-NMR}$  spectra of NC-514 and NC-514-DEA.



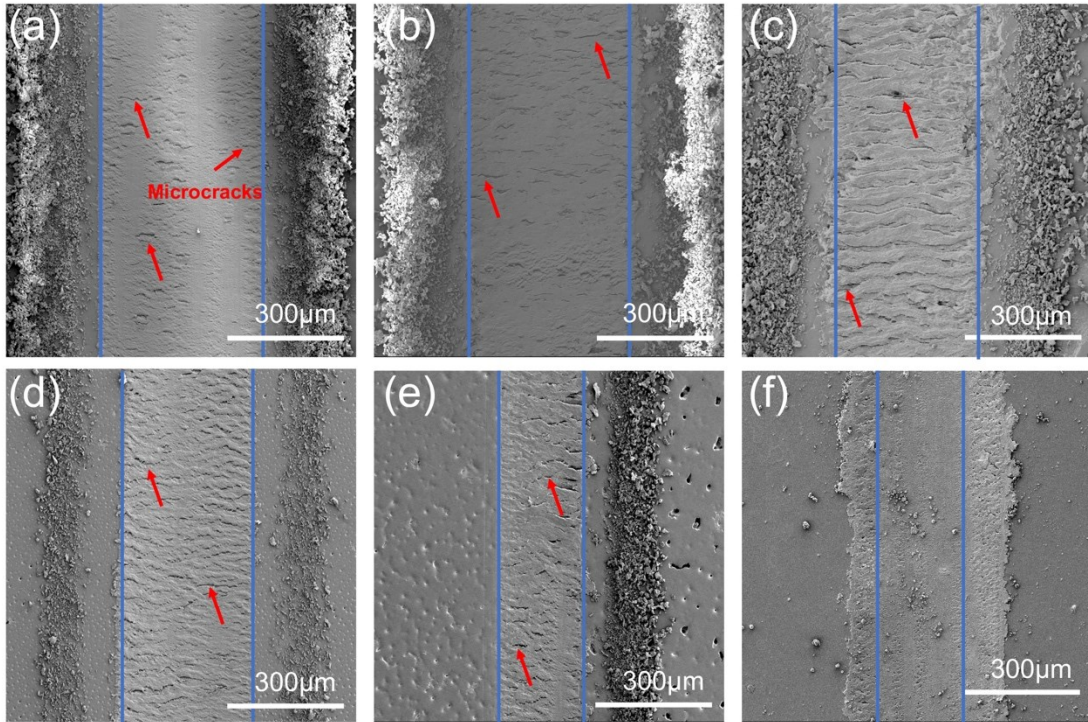
**Fig. S2.** Epoxy/IGO value of Roman spectrum of (b) EP/GO0.5% and (d) EP/GOND0.5%.



**Fig. S3.** TGA curves of EP and its nanocomposites.



**Fig. S4.** SEM of wear debris on composite coatings at frequency 3Hz under 2N load at ambient environment with (a) EP, (b) EP/GO<sub>0.5%</sub>, (c) EP/GOND<sub>0.1%</sub>, (d) EP/GOND<sub>0.25%</sub>, (e) EP/GOND<sub>0.5%</sub> and (f) EP/GOND<sub>1%</sub>.



**Fig. S5.** SEM of wear scar on composite coatings at frequency 3Hz under 2N load at ambient environment with (a) EP, (b) EP/GO<sub>0.5%</sub>, (c) EP/GOND<sub>0.1%</sub>, (d) EP/GOND<sub>0.25%</sub>, (e) EP/GOND<sub>0.5%</sub> and (f) EP/GOND<sub>1%</sub>.