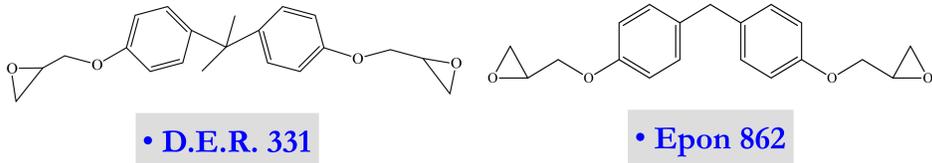


Multifunctional Epoxy Nanocomposites---Dr. Hongbo Gu

➤ Epoxy

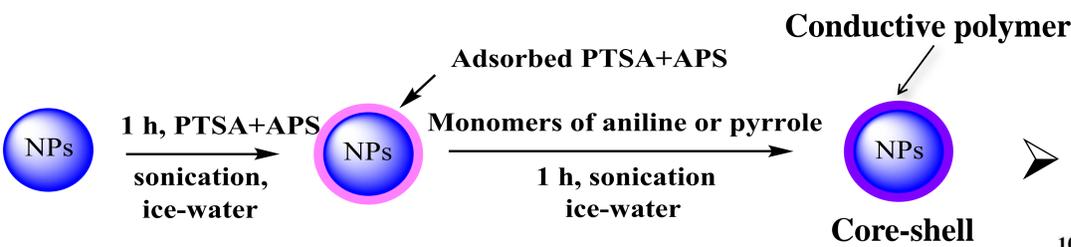
A class of reactive prepolymers and polymers which contain epoxide groups

▪ Chemical Structure of Epoxy Monomer

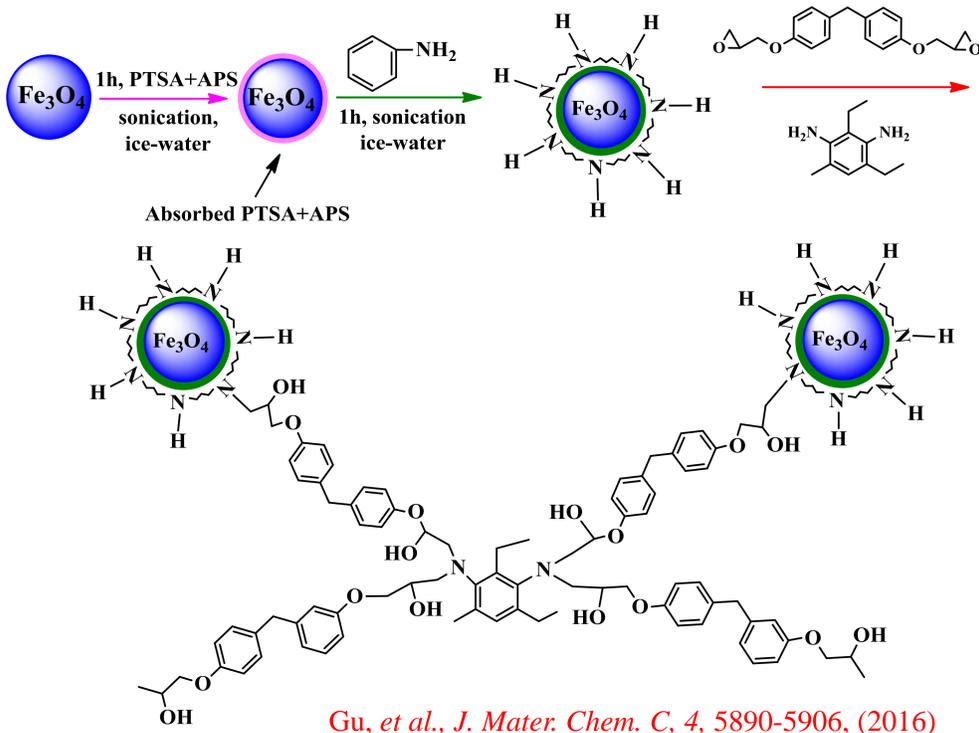


➤ Epoxy Nanocomposites Fabrication

▪ Surface Functionalization of Nanofillers

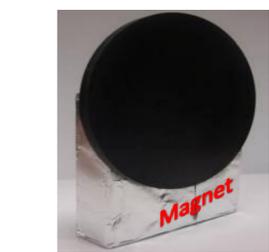
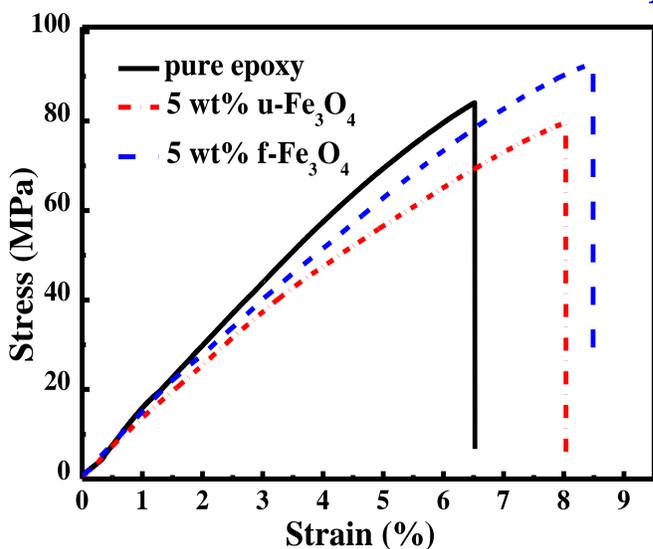


▪ Multi-functional Epoxy Nanocomposites Fabrication

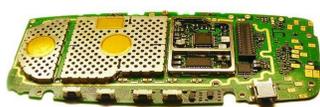


➤ Magnetic Epoxy Nanocomposites

✓Magnetic Property:



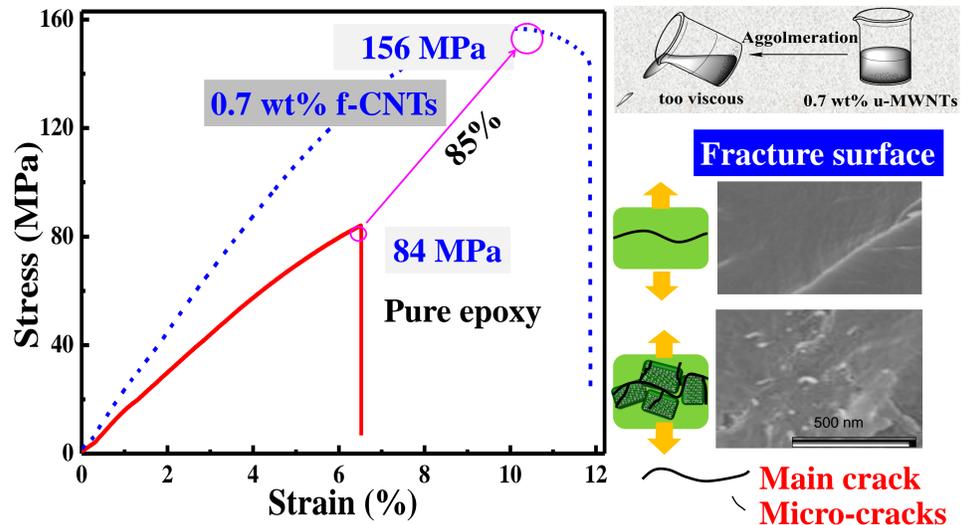
✓Applications:



Microwave Absorption

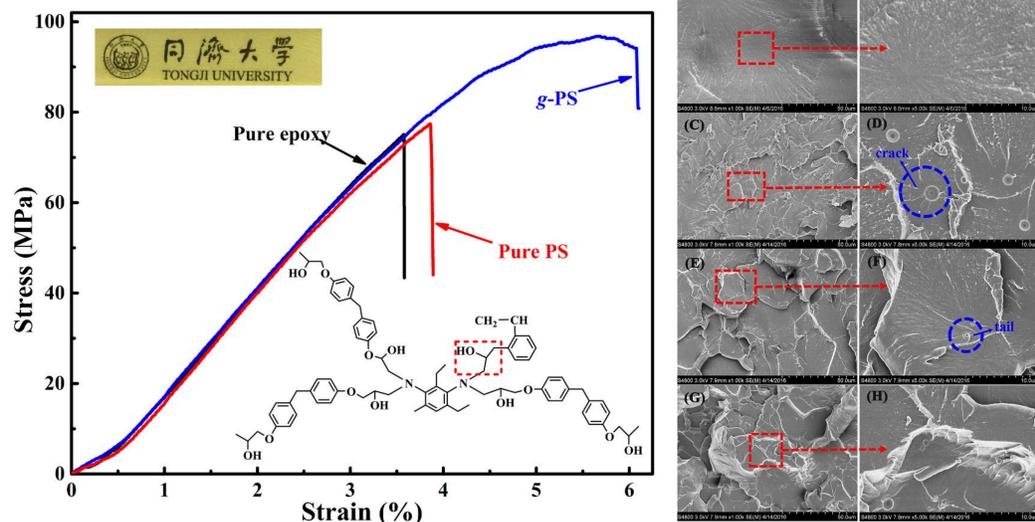
Gu, et al., *ACS Appl. Mater. Interfaces* 4(10), 5613–5624 (2012)

➤ Strengthened Epoxy Nanocomposites



Gu, et al., *J. Mater. Chem. C* 1, 729-743 (2013)
Most accessed manuscript for 2013 in JMCC

➤ Toughened Epoxy Nanocomposites

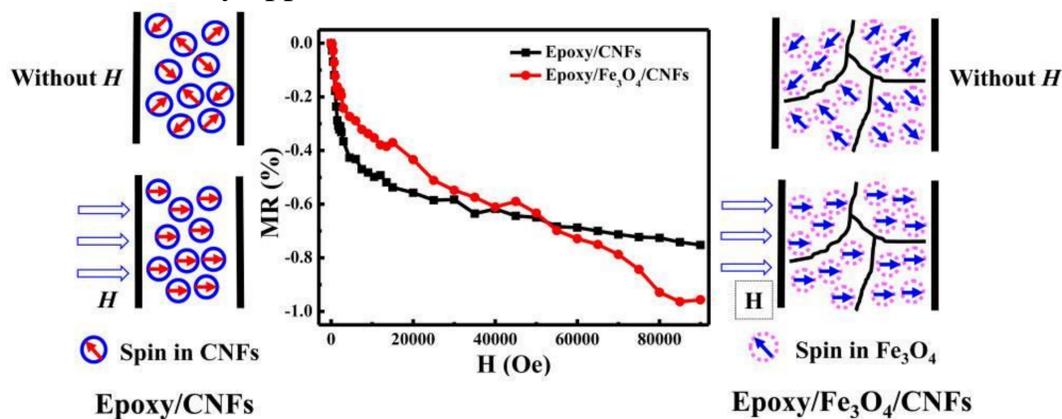
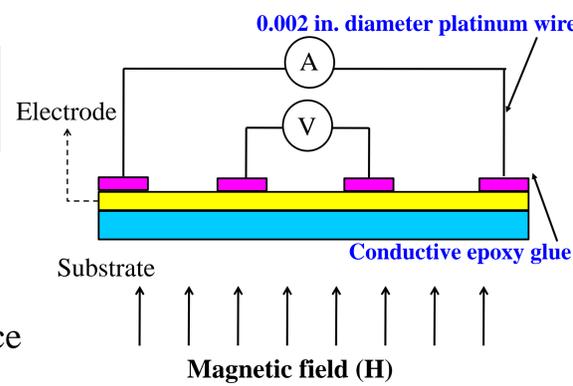


➤ Magnetoresistive Epoxy Nanocomposites

✓Resistance change after applying magnetic field

$$MR(\%) = \frac{R(H) - R(0)}{R(0)} \times 100$$

where: $R(0)$ and $R(H)$: resistance at zero and any applied field H .



Gu, et al., *Adv. Mater.*, 27, 6277-6282, (2015)

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