Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Segregated Poly (Arylene Sulfide Sulfone) / Graphene Nanoplatelets Composites for Electromagnetic Interference Shielding prepared by partial dissolution method

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1. Characterization of PASS

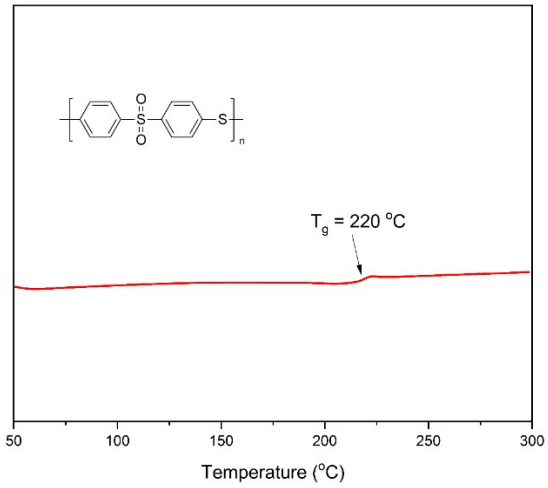

Fig. S1 DSC curve of PASS, the insert is the molecular of PASS

2. Characterization of GNPs

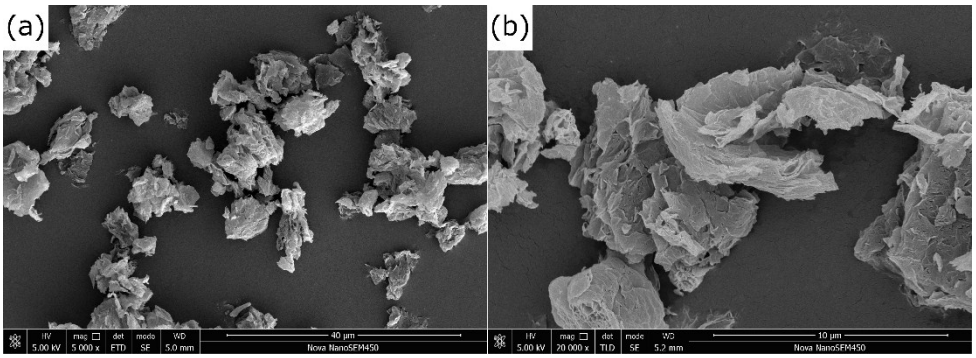

Fig.S2 SEM of GNPs particles: (a) 5000×, (b) 20000×

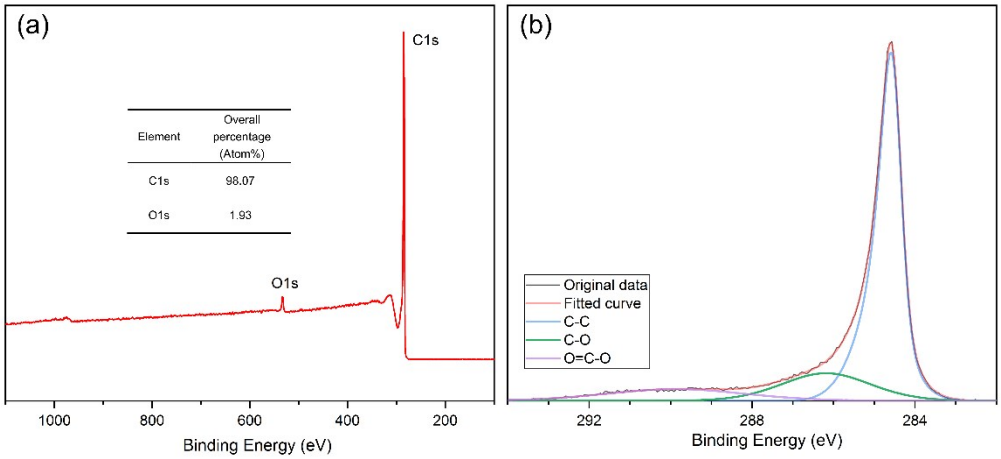

Fig.S3 XPS of GNPs (a) wide scan; (b) C1s.

3. Optical microscopy observation of dissolution process of single PASS granules at room temperature

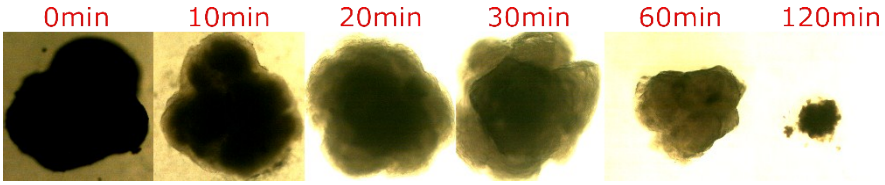

Fig.S4 optical microscopy image of PASS granule at different dissolution time

4. The power coefficient of reflectivity (R), transmissivity (T) and absorptivity (A) as well as EMI SE (SE_T), microwave reflection (SE_R) and microwave absorption (SE_A) from scattering parameters[1]

$$R = |S_{11}|^2 \tag{1}$$

$$T = |S_{21}|^2 \tag{2}$$

$$A = 1 - R - T \tag{3}$$

Then SE_T, SE_R and SE_A can be calculated as follows:

$$SE_R = -10\lg(1 - R) \tag{4}$$

$$SE_A = -10\lg\left(\frac{T}{1 - R}\right) \tag{5}$$

$$SE_T = -10\lg(T) = SE_R + SE_A \tag{6}$$

5. Determination of optimal dissolution time

The optimal dissolution is determined based on the tensile strength and EMI SE of PD-5 with different dissolution time.

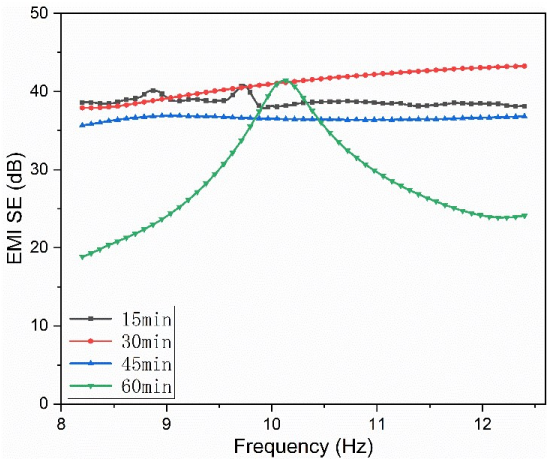

Fig.S5 EMI SE of PD-5 composites with different dissolution time

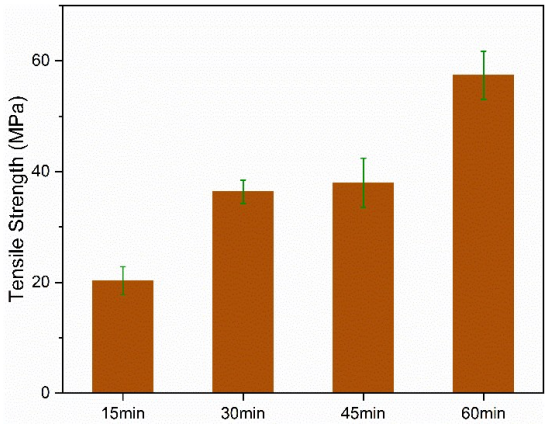

Fig.S6 Tensile strength of PD-5 composites with different dissolution time

References:

1 L.-C. Jia, D.-X. Yan, C.-H. Cui, X. Jiang, X. Ji and Z.-M. Li, *Journal of Materials Chemistry C*, 2015, **3**, 9369–9378.