Electronic Supplementary Material (ESI) for Journal of Materials Chemistry

Electronic Supplementary Information

Aluminum-organophosphorus hybrid nanorods for simultaneously enhancing flame retardancy and mechanical properties of epoxy resin

Ma Jiajun, Yang Junxiao*, Huang Yawen* and Cao Ke

** School of Materials Science and Technology & State Key Laboratory Cultivation Base for Nonmetal Composite and Functional Materials, Southwest University of Science and Technology, Mianyang, 621010, China.*

Email: yangjunxiao@swust.edu.cn or ywhuang1981@yahoo.cn.

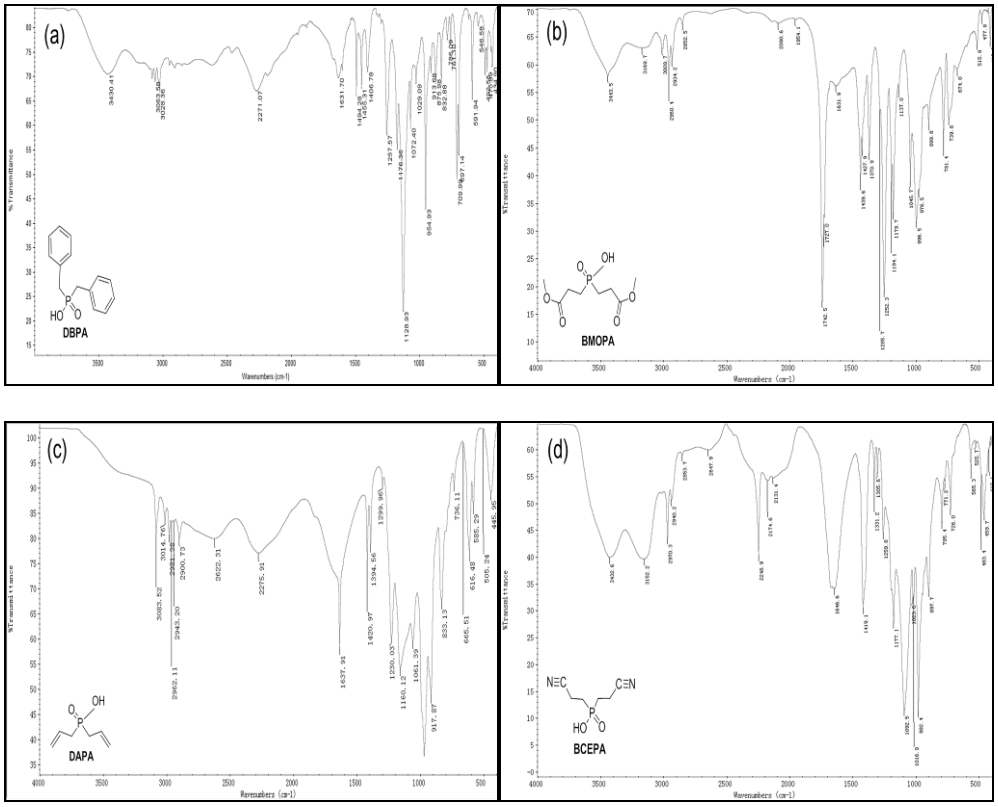

Fig. S1 FTIR spectrum of organophosphinic acids.

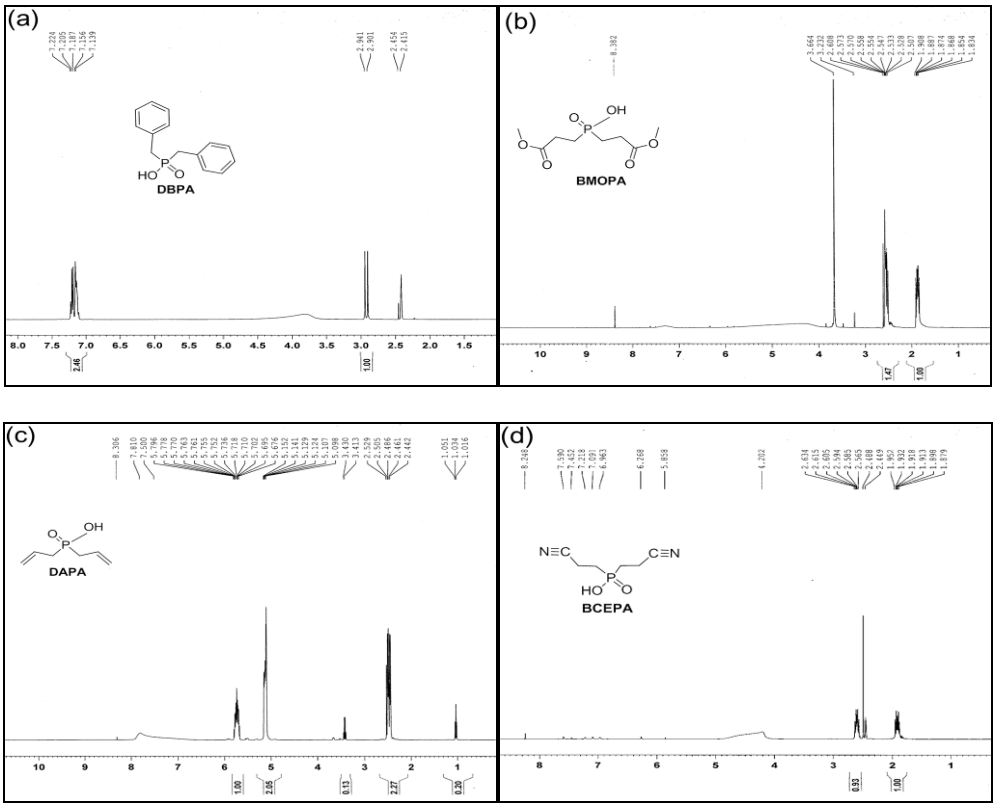

Fig. S2 ^{1}HNMR spectrum of organophosphinic acids.

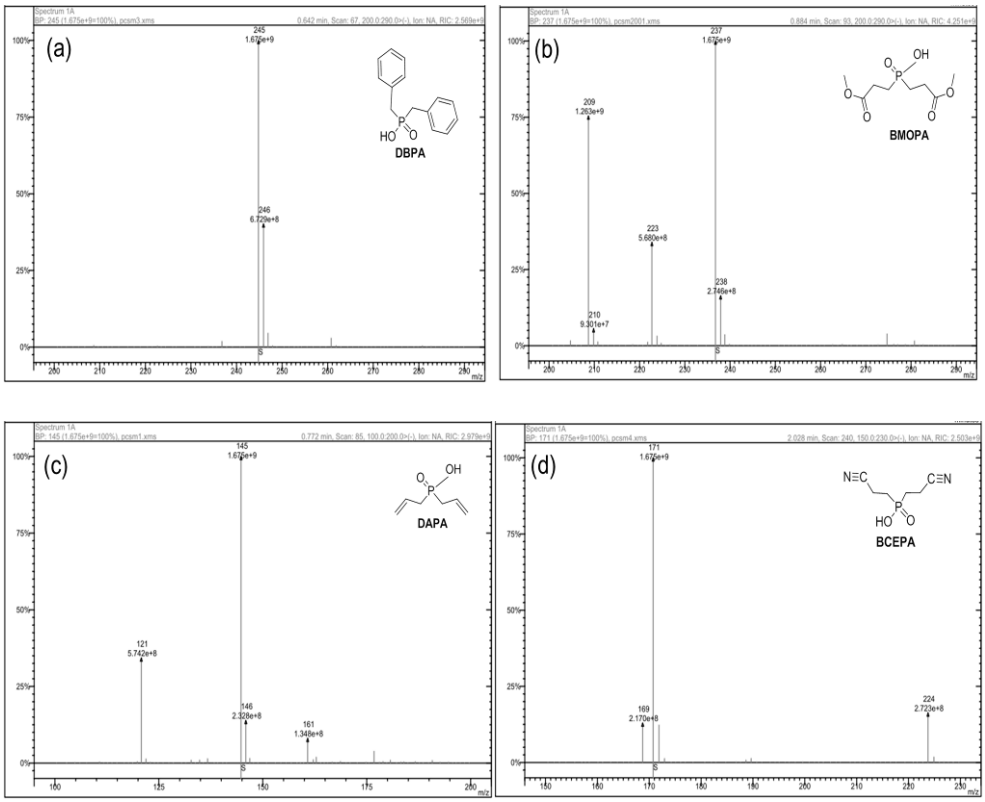

Fig. S3 Mass spectra of organophosphinic acids.

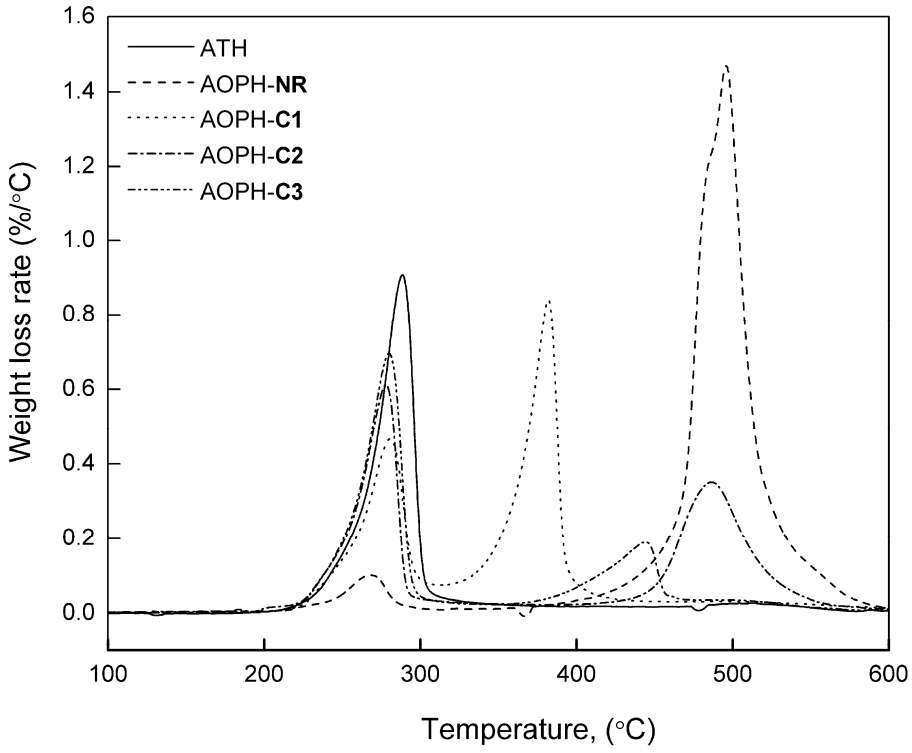

Fig. S4 Derivative thermogravimetric analysis (DTG) curves of ATH, AOPH-**NR** and other AOPHs.

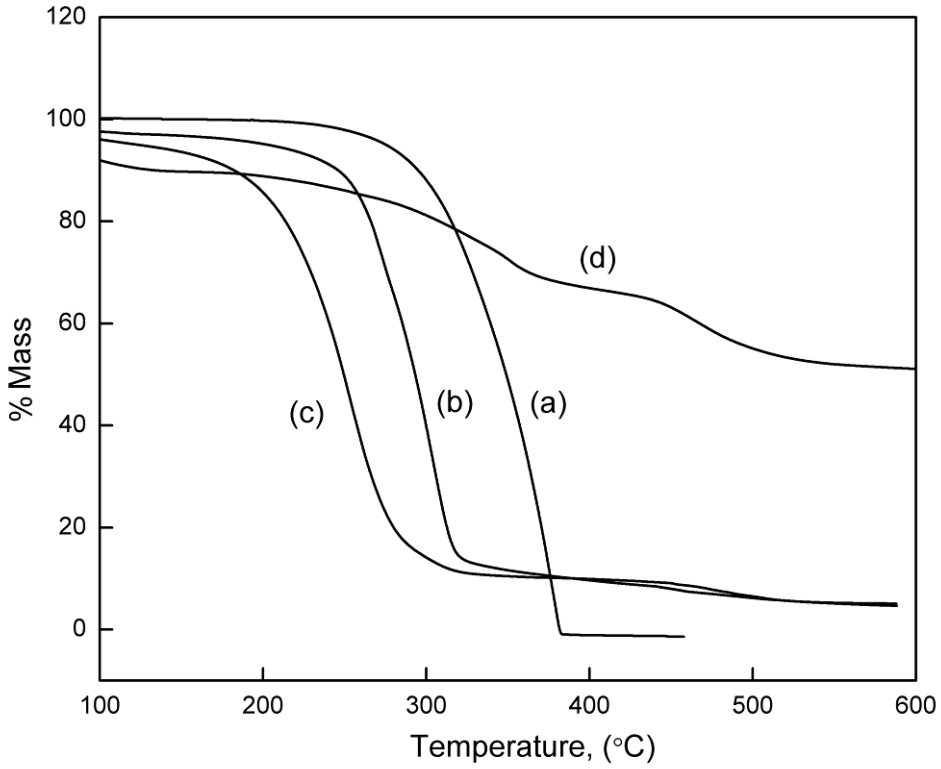

Fig. S5 TGA curves of organophosphinic acids in nitrogen: (a) DBPA, (b) BMOPA, (c) DAPA and (d) BECPA.

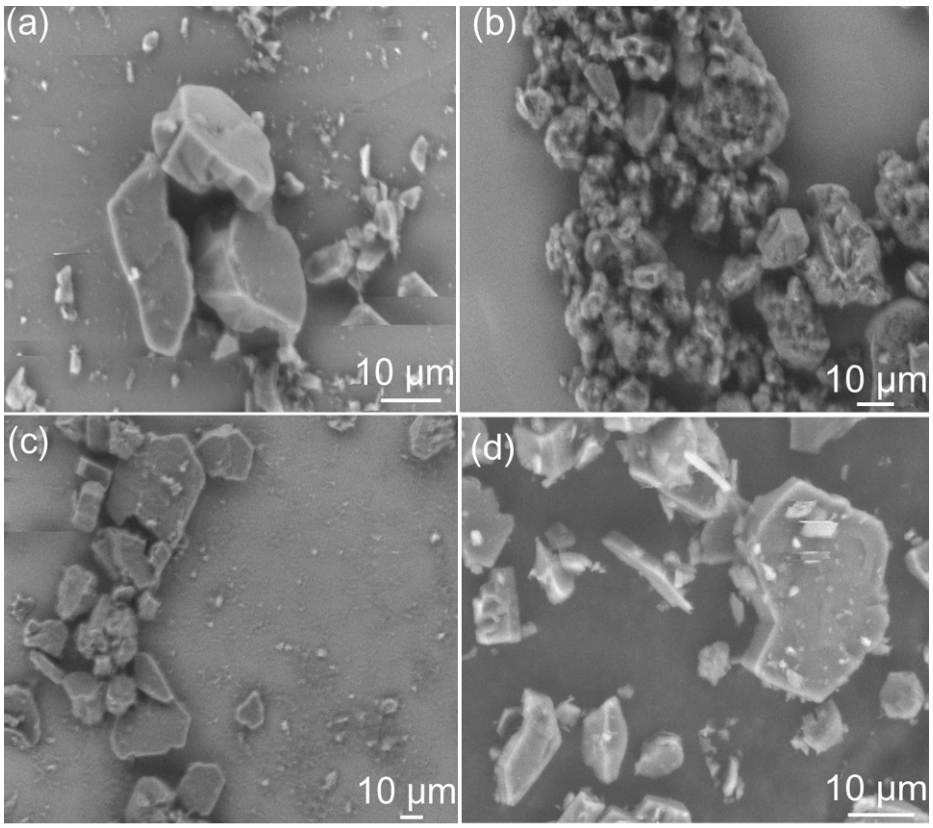

Fig. S6 SEM images of ATH and AOPHs: (a) ATH, (b) APOH-**C1**, (c) APOH-**C2** and (d) APOH-**C3**.

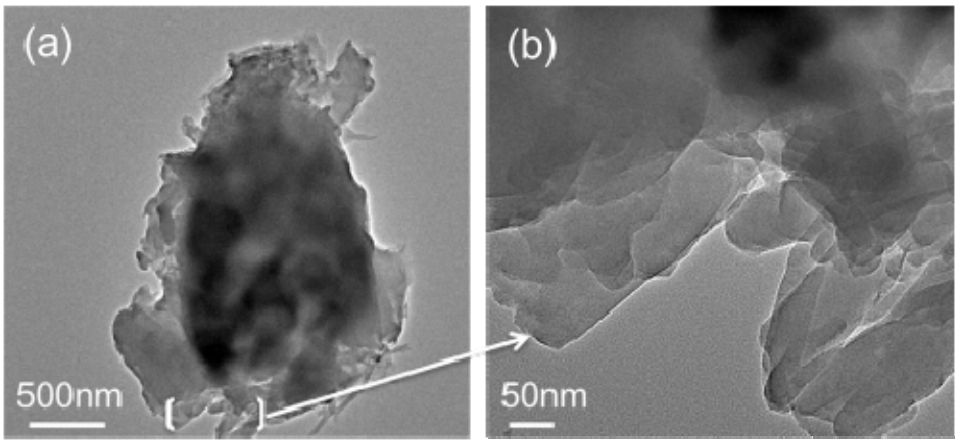

Fig. S7 TEM images of AOPH-**C1** (a) and the tactoids (b).

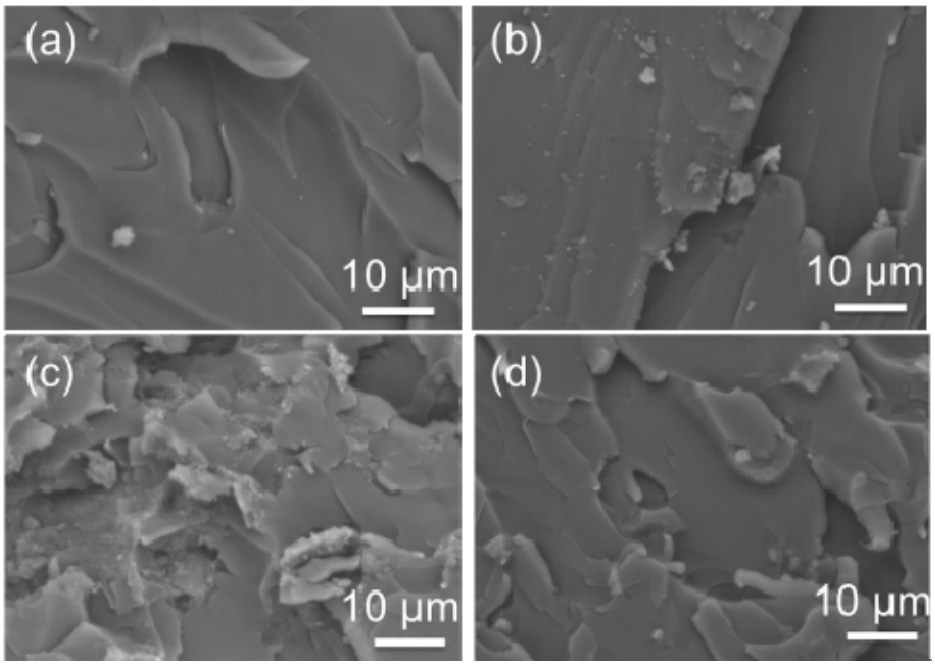

Fig. S8 SEM images of cross section of EP-4.25%ATH composite (a), EP -4.25%AOPH-**C1** composite (b), EP -4.25%AOPH-**C2** composite (c) and EP -4.25%AOPH-**C3** composite (d).

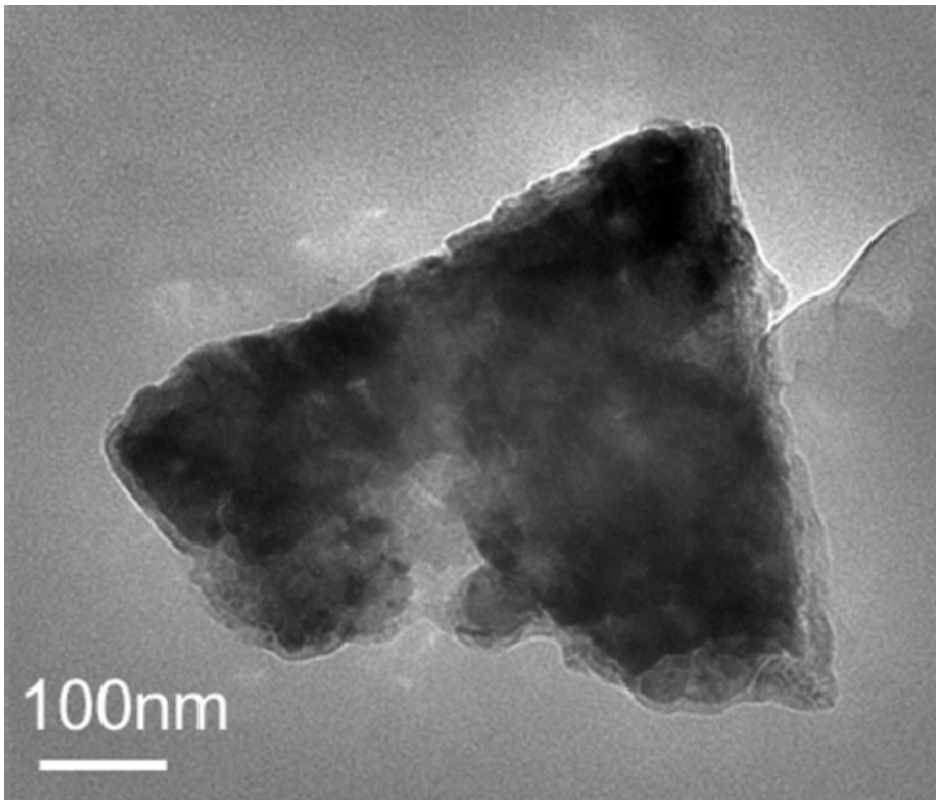

Fig. S9 TEM image of EP-4.25%AOPH-**C1** composite.

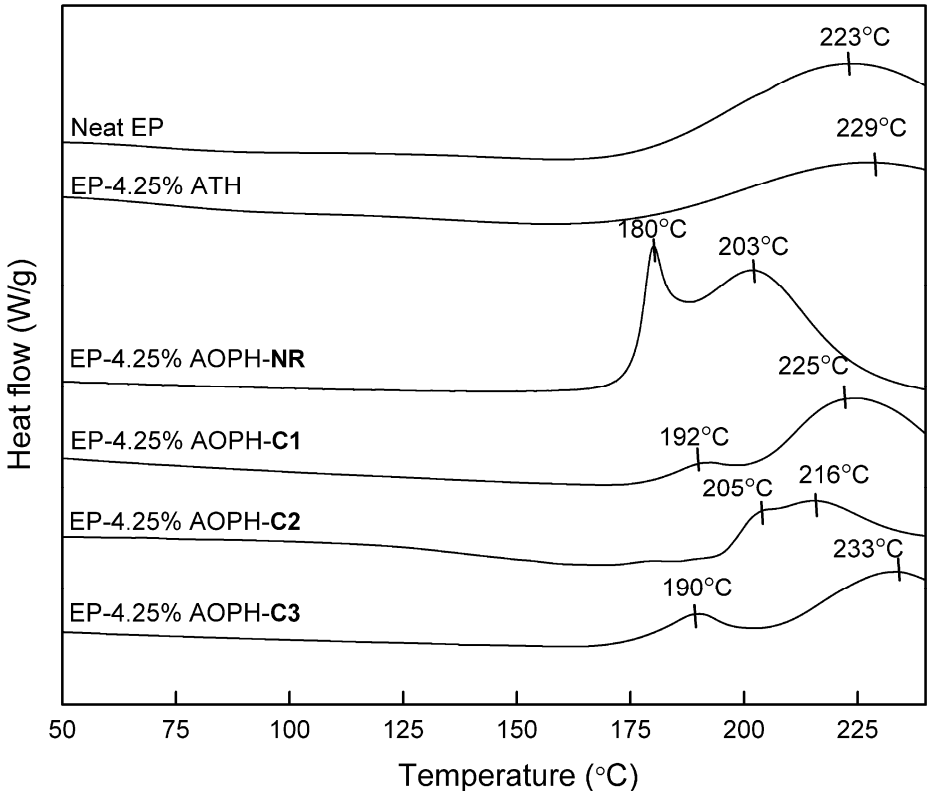

Fig. S10 Curing behavior of neat EP, EP/AOPH-**NR** composite, and other EP/AOPHs composites (by non-thermal DSC at a heating rate of 20 ^{o}C min^{-1}).