

Electronic Supplementary Material (ESI) for RSC Advances.

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Supporting Material for

Synergistic effects of core@double-shell structured magnesium hydroxide microcapsules on flame retardancy and smoke suppression in flexible poly(vinyl chloride)

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In this work, we have prepared core@double-shell structured MH@DOPO@MF flame retardant and main investigate its flame retardancy and smoke suppression effects in flexible PVC. The chemical structure and morphologies of the as-prepared MH@DOPO@MF was characterized by FTIR and SEM, the results was shown in Fig.1 and Fig.2 (**Supporting Material**).

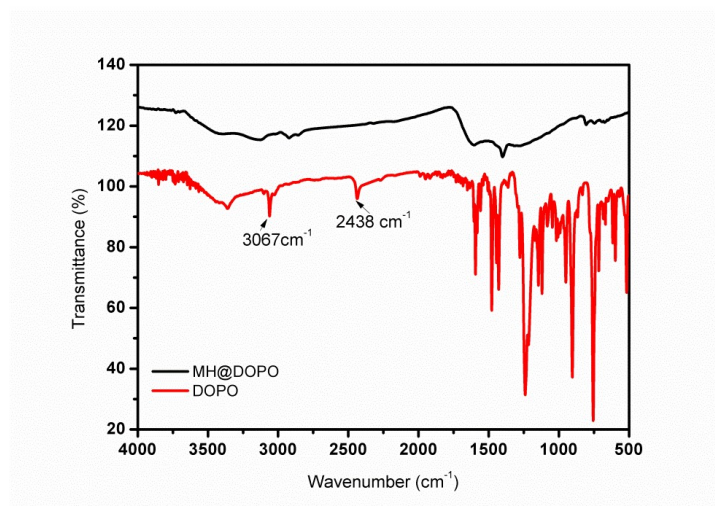


Fig.1 FTIR spectra of MH@DOPO and DOPO

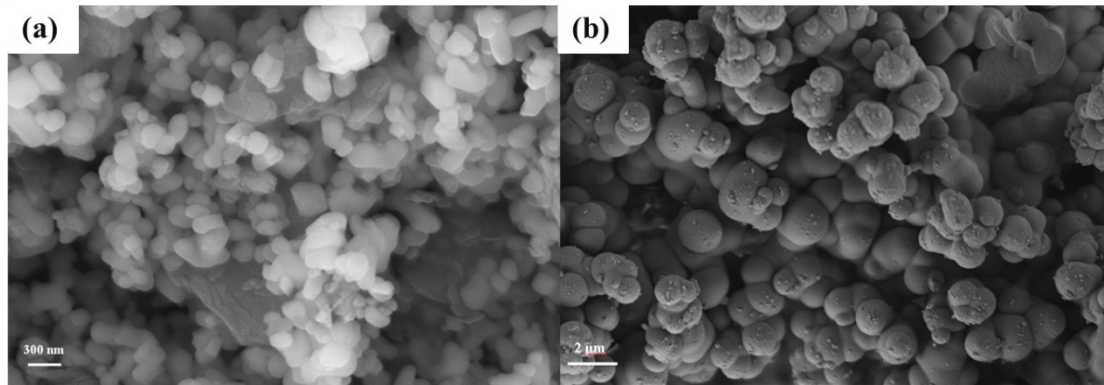


Fig.2 SEM images of (a) $\text{Mg}(\text{OH})_2$ and (b) MH@DOPO@MF

As shown Fig.1, the FTIR spectrum of DOPO, transmittance band at 3067 cm^{-1} represents the C-H stretching vibration for benzene ring and the typical band at 2438 cm^{-1} is representative of P-H. For the FTIR spectrum of MH@DOPO , the typical band of DOPO at 2438 cm^{-1} disappeared. In Fig.2, the morphology of MH is nanoscale laminate structure, the morphology of MH@DOPO@MF is sphere and lamellar particles are not observed. Obtained results indicated that MH was encapsuled in resins.