SF1: Raman spectrum of 2D BP dried
**SF2:** Bright-field TEM images of dried 2D BP

**SF3:** Powdery composite (PS1)’s picture as obtained by solutions blending and co-precipitation approach
**SF4**: DSC curves of blank experiment (PS0) and composites with 2D BP nanolayers (samples PS1 and PS2)

**SF5**: TGA curves of blank experiment (PS0) and composites with 2D BP nanolayers (samples PS1 and PS2)
SF6: ATR Spectra of samples PS0 and PS1 before and after UV irradiation