



**S4 Fig. Representative Raman microspectroscopic spectra (*left*) and their corresponding Raman images based on integrated intensities in the range of 100-700 cm<sup>-1</sup> (*right*), observed on pure polyester coating surfaces (0% SiO<sub>2</sub>NPs) before and after 3 years of environmental exposure in sub-tropical and tropical climates (from *top* to *bottom*). Note that the representative Raman spectra were extracted from the locations indicated by arrows on the corresponding images.**