

BIO-BASED CARBON DOTS COMPRISING PORPHYRIN FOR ATRP POLYMERIZATION

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Development of green and highly effective photocatalysts or photosensitizers with sustainable feedstock for photopolymerization has received increased. Here, we synthesized carbon dots porphyrin (**CDP**) via easily route using biomass based materials. These **CDPs** were investigated regarding their function as sensitizer for atom transfer radical polymerization (ATRP) using Cu(II) complex as deactivator. **CDPs** functioned as photosensitizer resulting in generation of Cu(I) under blue light LED irradiation. The resulting **CDPs** showed absorbance at ca. 410nm, and fluorescence emission at ca. 700nm. Global analysis of the fluorescence decays indicated occurrence of several emitting species linked over the entire emission spectrum. This showed that excited singlet states possess a major function to control photochemical events. Additionally, photo-ATRP experiments was successfully carried out by using Cu(II) at the ppm range resulting in polymers with small dispersity of molecular weight that indicates living condition of polymerization.

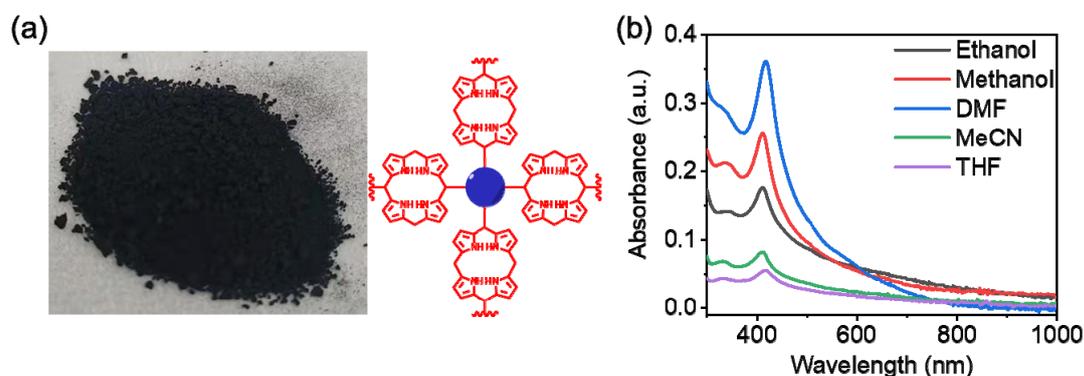


Figure 1 (a) photograph of **CDPs** and its structure, (b) UV-Vis spectra of **CDPs** in different solvent.