

## Supplementary Information

### High antimicrobial photodynamic activity of photosensitizer encapsulated dual-functional metallocatanionic vesicles against drug-resistant bacteria *S. aureus*

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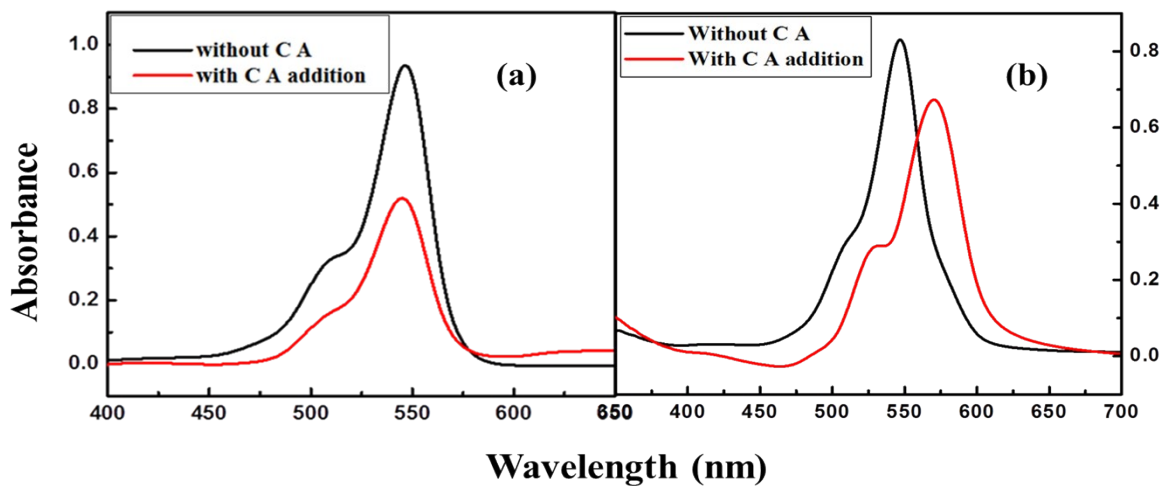
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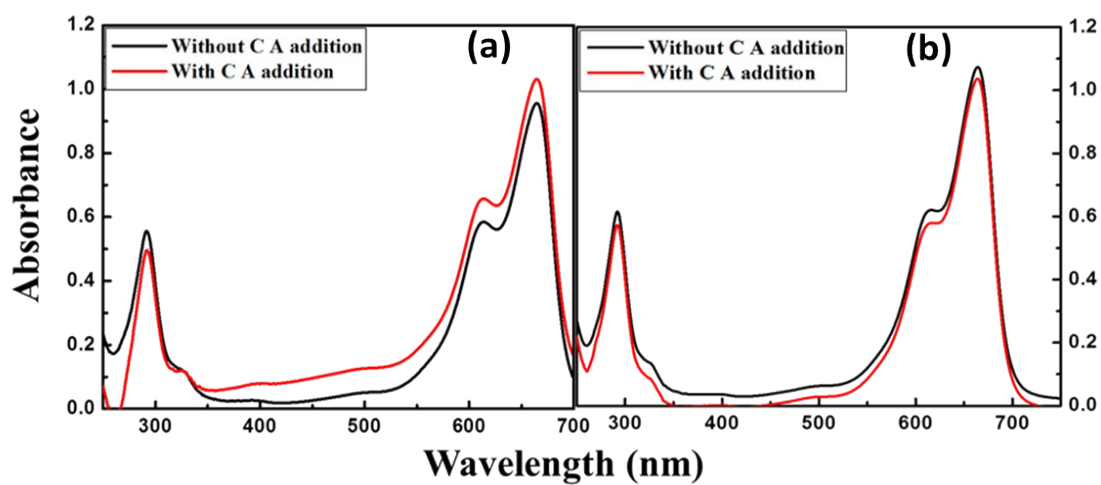
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**Table S1:** SAXS parameters of CuCPCII AOT (70:30) and CuCPCII AOT (30:70) obtained by model fitting with Vesicle model and 0.1 polydispersity (Schulz) included in core radius.

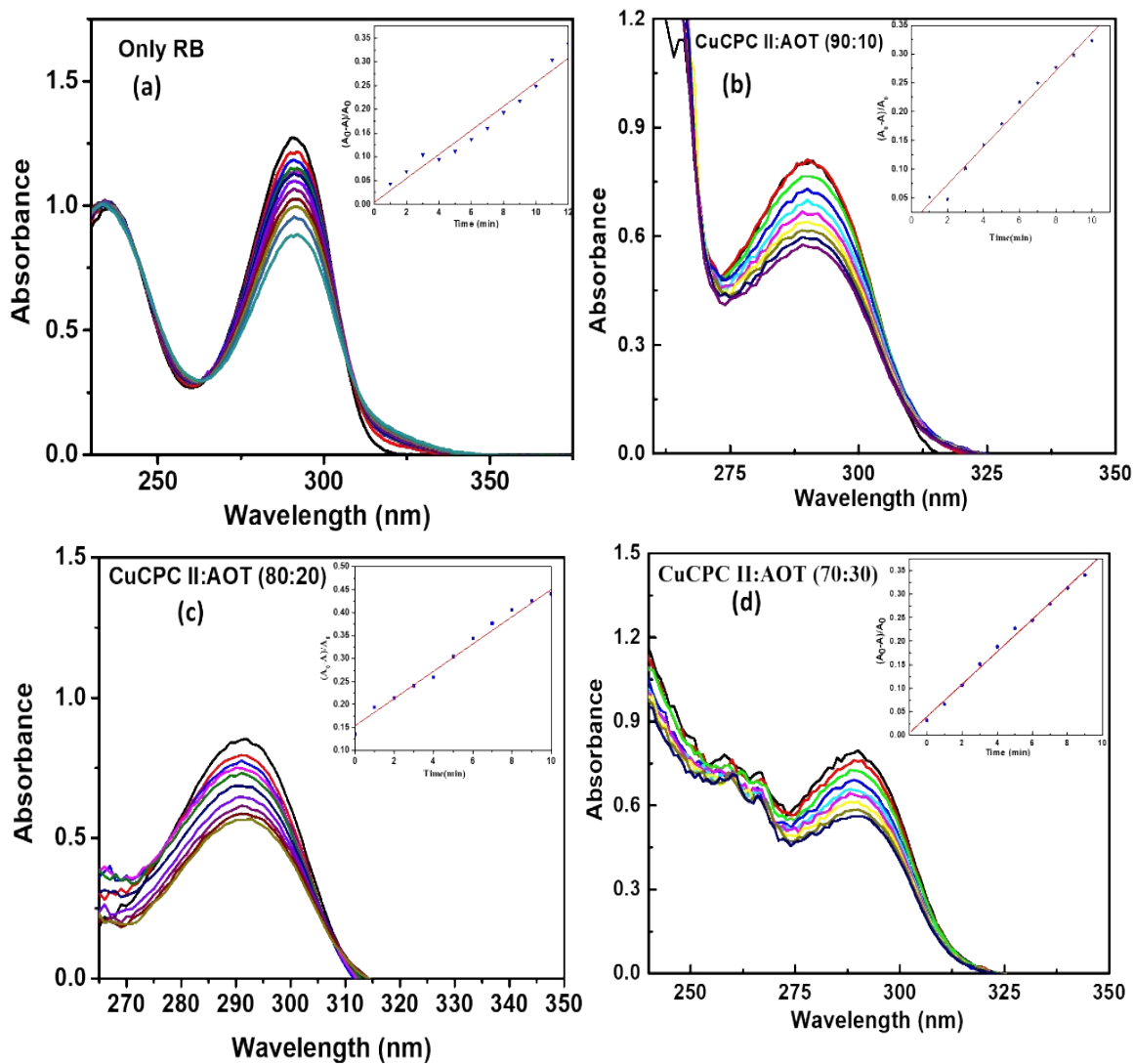
Sample Name	Core Radius (Å)	Inner Shell thickness (Å)	Hydrophobic Shell thickness (Å)	Outer Shell thickness (Å)	Inner Shell SLD (Å <sup>-2</sup> )	Hydrophobic Shell SLD (Å <sup>-2</sup> )	Outer shell SLD (Å <sup>-2</sup> )	$\chi^2$
1%CuCPCII AOT (70:30)	176.5 ±2.6	10.3 ±0.3	13.1 ±0.2	17.0±0.1	10.5 ±0.2	6.8 ±0.2	12.3 ±0.2	1.2
1%CuCPCII AOT (30:70)	Low scattering							
2%CuCPCII AOT (70:30)	193.0 ±1.8	10.3 ±0.3	13.2 ±0.2	17.0±0.1	10.1 ±0.2	6.8 ±0.1	11.8 ±0.4	1.4
2%CuCPCII AOT (30:70)	Low scattering							



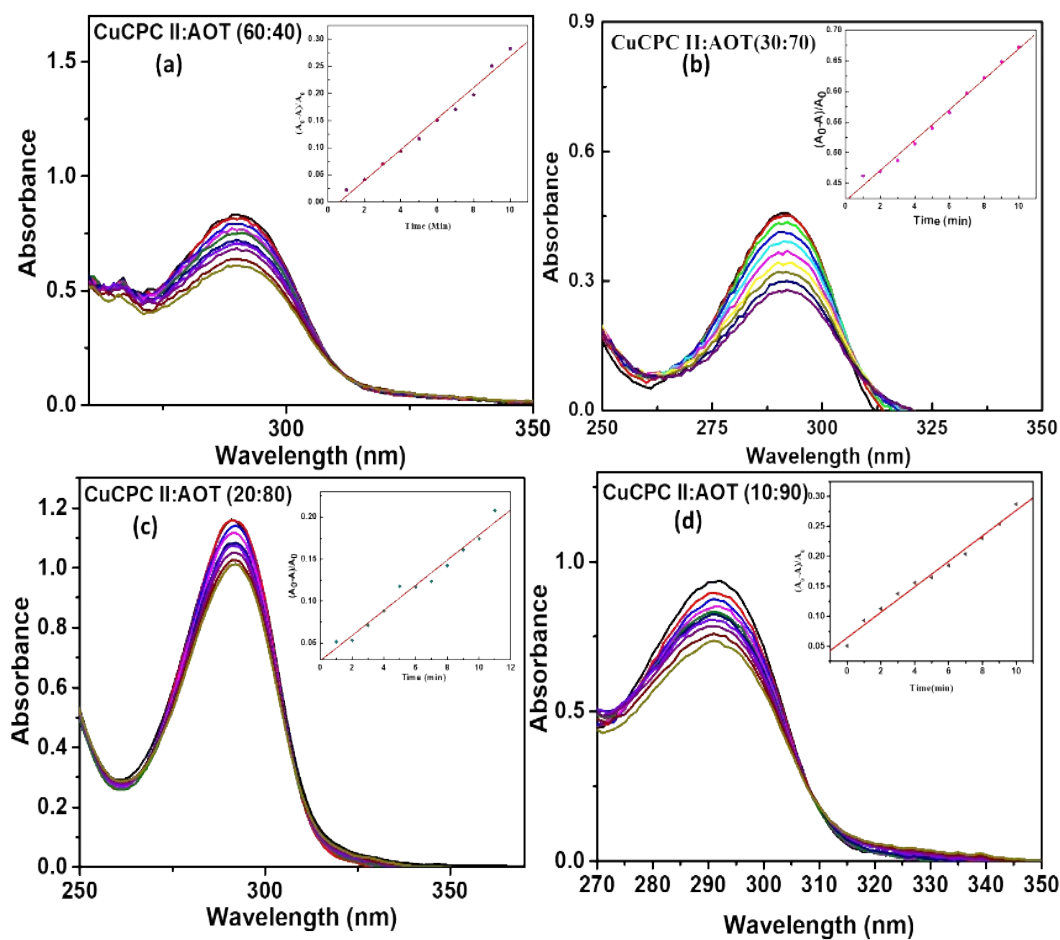
**Figure S1.** UV-Visible absorption spectra of RB without addition (black) of CuCPCII:AOT and with (red) (a) CuCPCII:AOT (30:70) and (b) CuCPCII:AOT (70:30) addition.



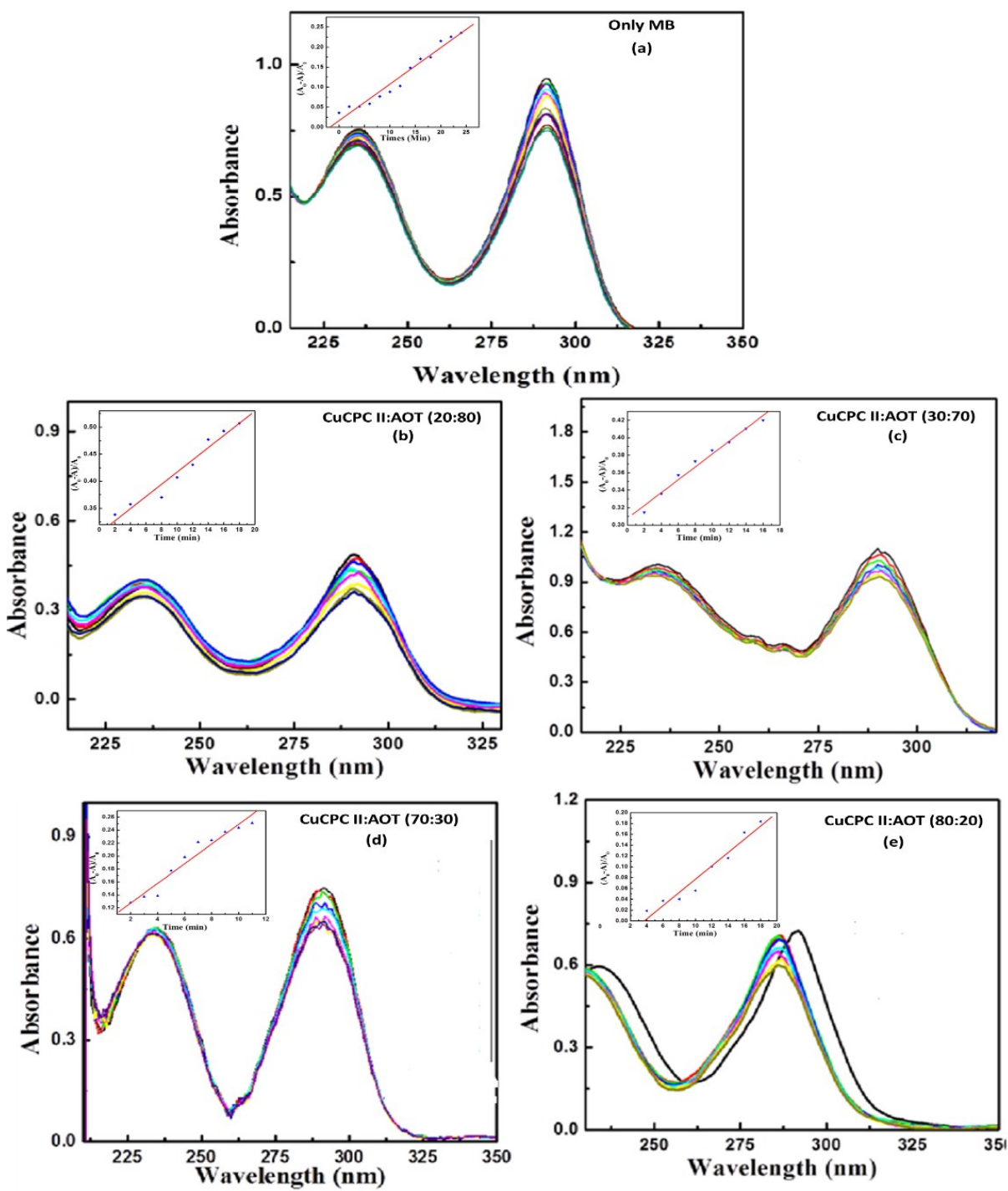
**Figure S2.** UV-Visible absorption spectra of MB without addition (black) of CuCPCII:AOT and with (red) (a) CuCPCII:AOT (30:70) and (b) CuCPCII:AOT (70:30) addition.



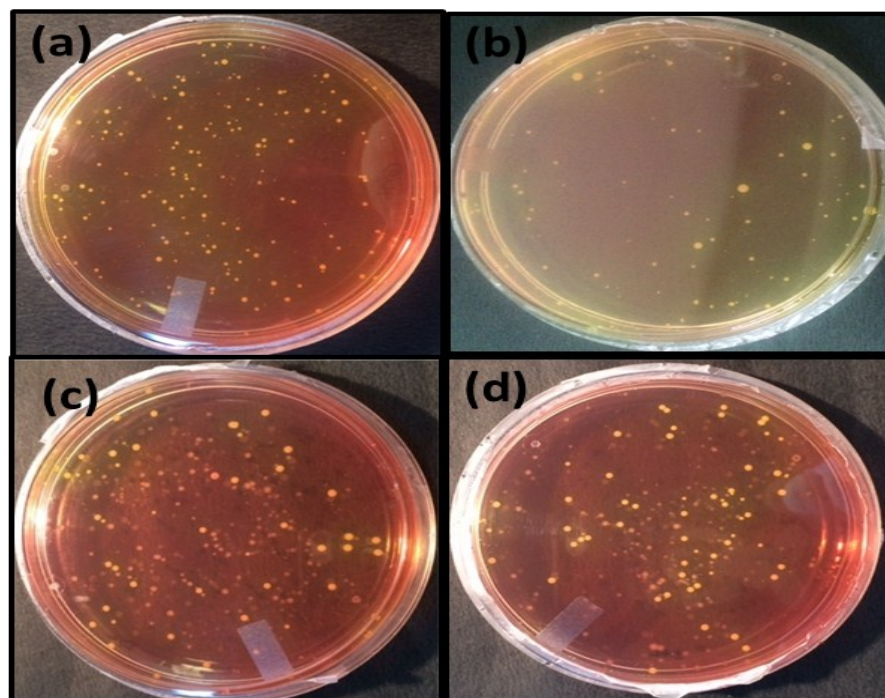
**Figure S3.** Graph of Uric acid quenching in presence of (a) pure RB dye, (b) RB with CuCPC II:AOT (10:90) mixture, (c) RB with CuCPC II:AOT (20:80) , (d) RB with CuCPC II:AOT (30:70) mixture irradiation.



**Figure S4.** Graph of Uric acid quenching in presence of (a) RB with CuCPC II:AOT (60:40), (b) RB with CuCPC II:AOT (30:70), (c) RB with CuCPC II:AOT (20:80) and (d) RB with CuCPC II:AOT (10:90) mixture irradiation.



**Figure S5.** Graph of UA quenching in presence of (a) MB dye irradiation, (b) MB with CuCPC II:AOT (20:80) mixture, (c) MB with CuCPC II:AOT (30:70) mixture, (d) MB with CuCPC II:AOT (70:30) mixture, (e) MB with CuCPC II:AOT (80:20) mixture



**Figure S6-** *S. aureus* colonies formation (a) Only RB dye (b) RB with laser light (c) only MB dye and (d) MB with laser light.