Electronic Supplementary Material (ESI) for Photochemical & Photobiological Sciences.

SUPPLEMENTARY INFORMATION:

Fig. A1 UV-Visible absorption spectra of the egg shell extract and the synthesized Cu NPS

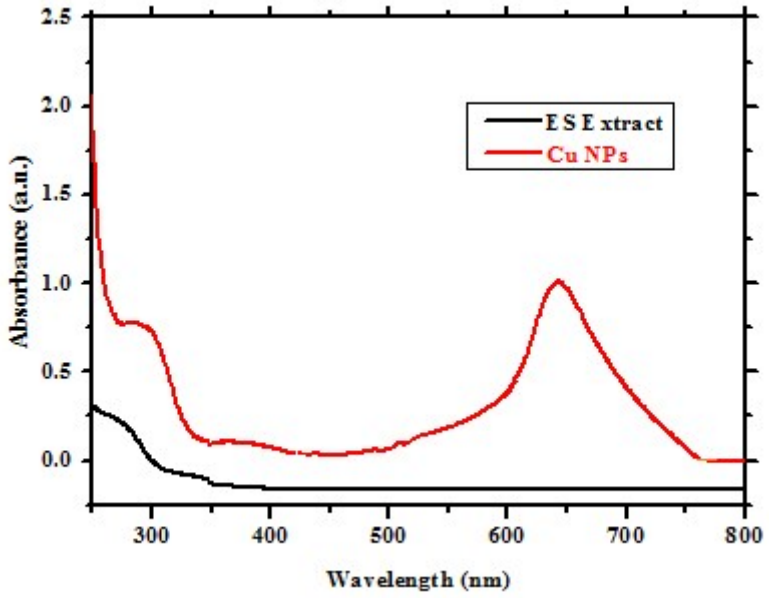

Fig. A1 UV-Visible absorption spectra of the egg shell extract and the synthesized Cu NPs.

The intermediates generated during the degradation process were analysed using LC-MS technique and were identified by comparison with commercial standards and by interpretation of their fragment ions in the mass spectra.

Fig. A2 (a) displayed the LC-MS of RB dye solution with Cu NPs initially. The figure depicted a prominent mass signal at m/z = 1022 which was very close to the formula mass of RB dye. Noticeably, no mass signals corresponding to the formula of reaction intermediates were found. Fig. A2 (b) showed the LC-MS of RB dye solution with Cu NPs after 165 minutes.

Here, it was observed that the signal at m/z = 1022 was weakened and multiple signals corresponding to the reaction intermediates were found.

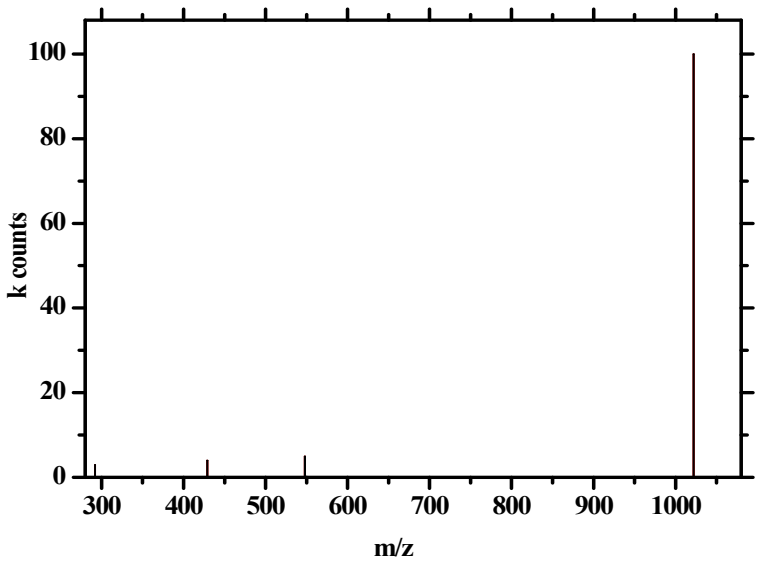

Fig. A2 (a) represented the LC-MS of RB dye solution with Cu NPs after 0 min.

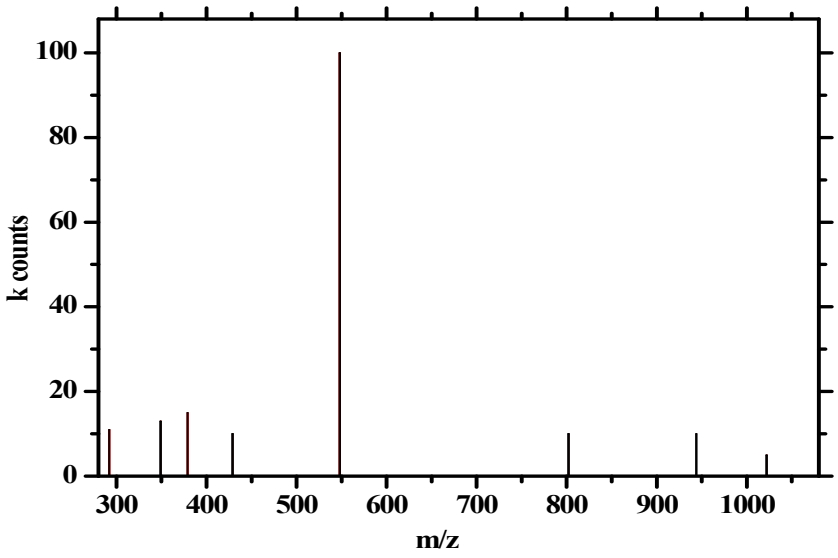

Fig. A2 (b) represented the LC-MS of RB dye solution with Cu NPs after 165 min.

Fig. A3 (a) depicted the LC-MS of MB dye solution with Cu NPs initially. The figure clearly displayed a prominent peak at m/z =319.9 which was very close to the formula mass of MB dye. Noticeably, no signals corresponding to the formation of reaction intermediates were observed. Fig. A3 (b) represented the LC-MS of MB dye solution with Cu NPs after 135 minutes. Here, it was found that the signal at m/z = 319.9 is

weakened and multiple mass signals corresponding to reaction intermediates have appeared.

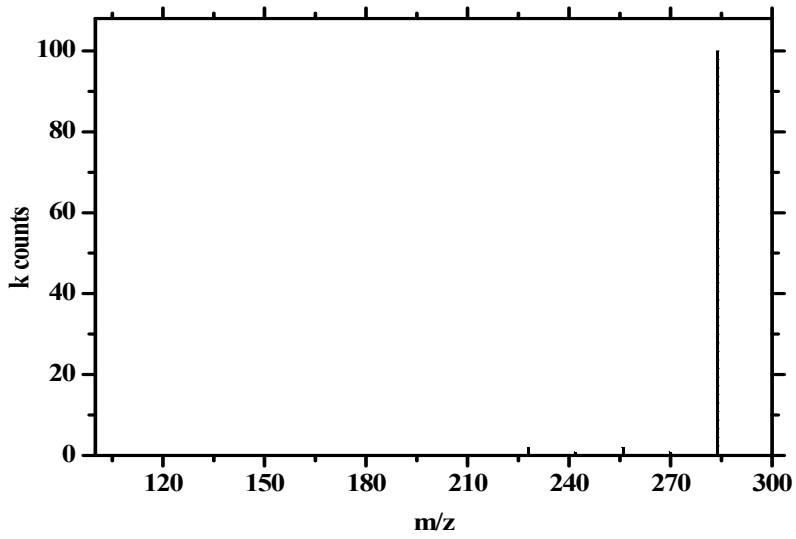

Fig. A3 (a) showed the LC-MS of MB dye solution with Cu NPs after 0 min.

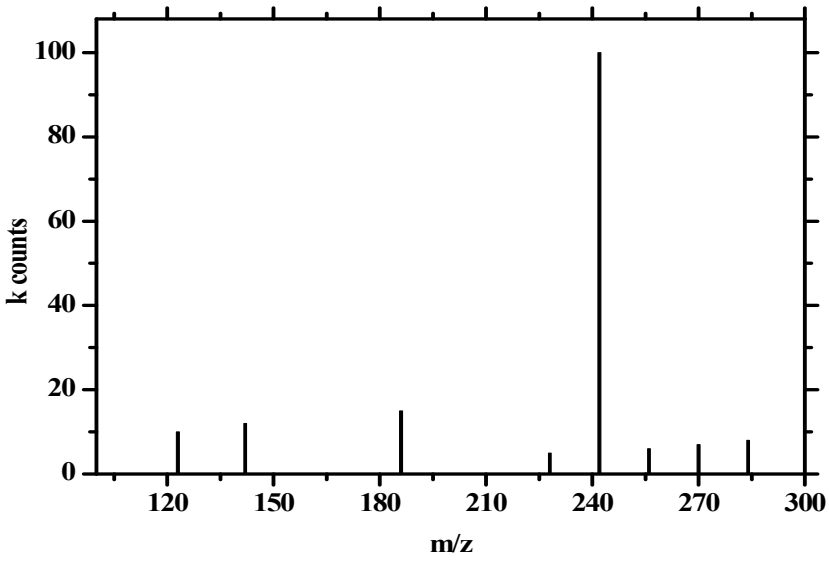

Fig. A3 (b) showed the LC-MS of MB dye solution with Cu NPs after 135 min.

Fig. A4 (a) depicted the LC-MS of MV6B dye solution with Cu NPs initially. The figure clearly displayed a prominent peak at m/z =344 which was very close to the formula mass of MV6B dye. Noticeably, no signals corresponding to the formation of reaction intermediates were observed. Fig. A4 (b) represented the LC-MS of MV6B dye solution

with Cu NPs after 150 minutes. Here, it was found that the multiple mass signals corresponding to reaction intermediates have appeared.

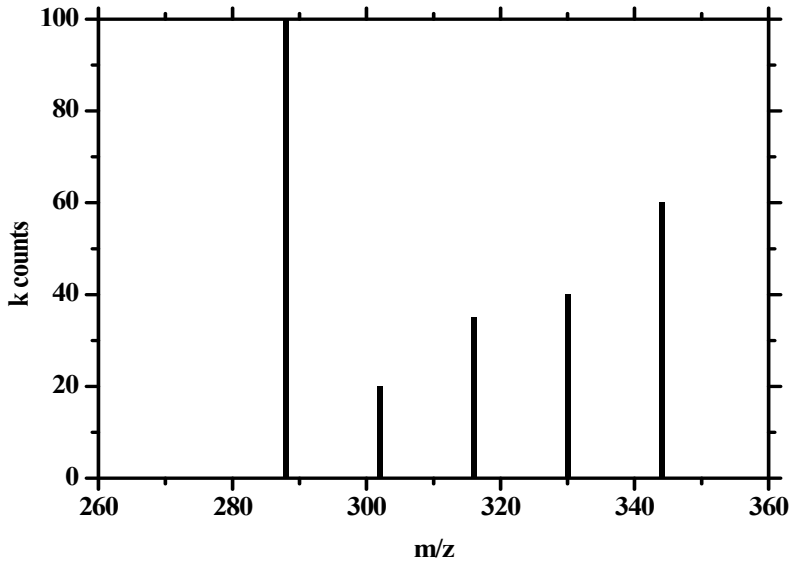

Fig. A4 (a) showed the LC-MS of MV6B dye solution with Cu NPs after 0 min.

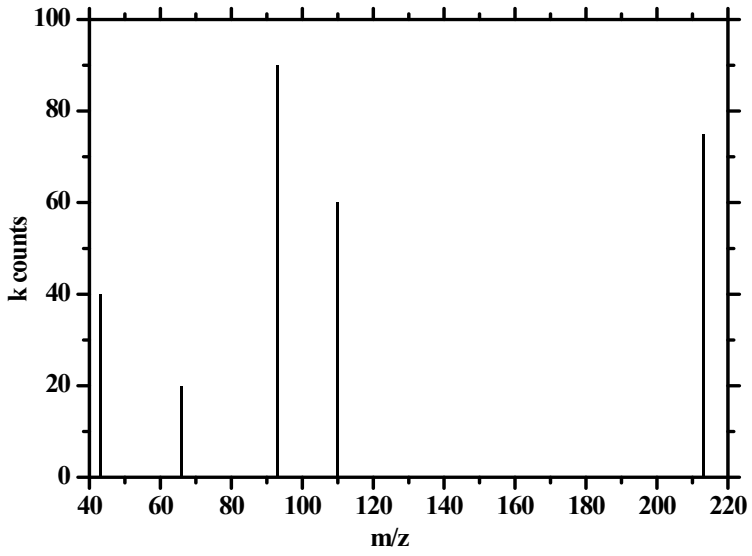

Fig. A4 (b) depicted the LC-MS of MV6B dye solution with Cu NPs after 150 min.