Supplementary Information

Selected spectral data of four representative 1,8-dioxo-1,2,3,4,5,6,7,8-octahydroxanthenes:

3,3,6,6-Tetramethyl-9-(4-chlorophenyl)-1,8-dioxo-1,2,3,4,5,6,7,8-octahydro-xanthene *(Table 2, entry 2):*
IR (KBr)ν_{max}: 3080, 2982, 1691, 1666, 1640, 1617, 1492, 1368, 1195, 1145, 1120, 1095, 1021, 847 cm^{-1}. ^{1}H NMR (CDCl$_3$, 500 MHz) δ: 0.88 (s, 6H, 2CH$_3$), 1.01 (s, 6H, 2CH$_3$), 2.19 (dd, 4H, J= 16.4, 16.1MHz, 2CH$_2$), 2.51 (dd, 4H, J=15.2, 12.0 MHz, 2CH$_2$), 4.72 (s, 1H), 7.52-8.10 (m, 4H, ArH); ^{13}C NMR (CDCl$_3$, 125.77 MHz) δ: 26.4, 28.5, 30.8, 31.7, 49.9, 113.9, 127.7, 129.8, 130.6, 143.1, 162.9, 195.9.

3,3,6,6-Tetramethyl-9-(2,4-dichlorophenyl)-1,8-dioxo-1,2,3,4,5,6,7,8-octahydroxanthene *(Table 2, entry 4):*
IR (KBr) ν: 3081, 2982, 1691, 1617, 1592, 1567, 1492, 1368, 1195, 1170, 1120, 1095, 1070, 1021, 872, 847 773, 574 cm^{-1}; ^{1}H NMR (CDCl$_3$, 500 MHz) δ: 0.90 (s, 6H, 2CH$_3$), 1.02 (s, 6H, 2CH$_3$), 2.13 (dd, 4H, J=16.0, 16.1 MHz, 2CH$_2$), 2.51 (t, 4H, 2CH$_2$), 4.78 (s, 1H), 7.23-7.38 (m, 4H, ArH); ^{13}C NMR (CDCl$_3$, 125.77 MHz) δ: 26.4, 28.5, 30.1, 31.6, 49.9, 112.7, 126.6, 128.6, 131.3, 133.0, 133.7, 139.9, 163.2, 195.7.

3,3,6,6-Tetramethyl-9-(3-nitrophenyl)-1,8-dioxo-1,2,3,4,5,6,7,8-octahydroxanthene *(Table 2, entry 3):* IR (KBr) ν: 3080, 2957, 2907, 1667, 1641, 1542, 1368, 1219, 1170, 1145, 1021, 822, 748, 698 cm^{-1}; ^{1}H NMR (CDCl$_3$, 500 MHz) δ: 0.89 (s, 6H, 2CH$_3$), 1.02 (s, 6H, 2CH$_3$), 2.17 (dd, 4H, J= 16.1, 16.2 MHz, 2CH$_2$), 2.56 (s, 4H, 2CH$_2$), 4.63 (s, 1H), 7.52-7.99 (m, 4H, ArH); ^{13}C NMR (CDCl$_3$, 125.77 MHz) δ: 26.4, 28.4, 31.5, 31.8, 49.8, 113.3, 121.3, 122.5, 129.4, 134.7, 146.3, 147.3, 163.4, 196.0.

3,3,6,6-Tetramethyl-9-(4-nitrophenyl)-1,8-dioxo-1,2,3,4,5,6,7,8-octahydroxanthene *(Table 2, entry 9):* IR (KBr) ν: 3081, 2957, 1666, 1641, 1542, 1492, 1368, 1219, 1170, 1145, 1121, 822, 748 cm^{-1}; ^{1}H NMR (CDCl$_3$, 500 MHz) δ: 0.96 (s, 6H, 2CH$_3$), 1.09 (s, 6H, 2CH$_3$), 2.15 (dd, 4H, J= 15.8, 15.9 MHz, 2CH$_2$), 2.59 (s, 4H, 2CH$_2$), 4.48 (s, 1H), 7.16-7.26 (m, 4H, ArH); ^{13}C NMR (CDCl$_3$, 125.77 MHz) δ: 26.4, 27.0, 29.0, 32.3, 50.3, 113.8, 123.6, 129.9, 146.4, 152.2, 163.9, 196.5.

EDX analysis of the nanocomposite