**<u>Electronic Supplementary Information</u>**

# Porous CuO nanostructure as reusable catalyst for oxidative degradation of organic water pollutants

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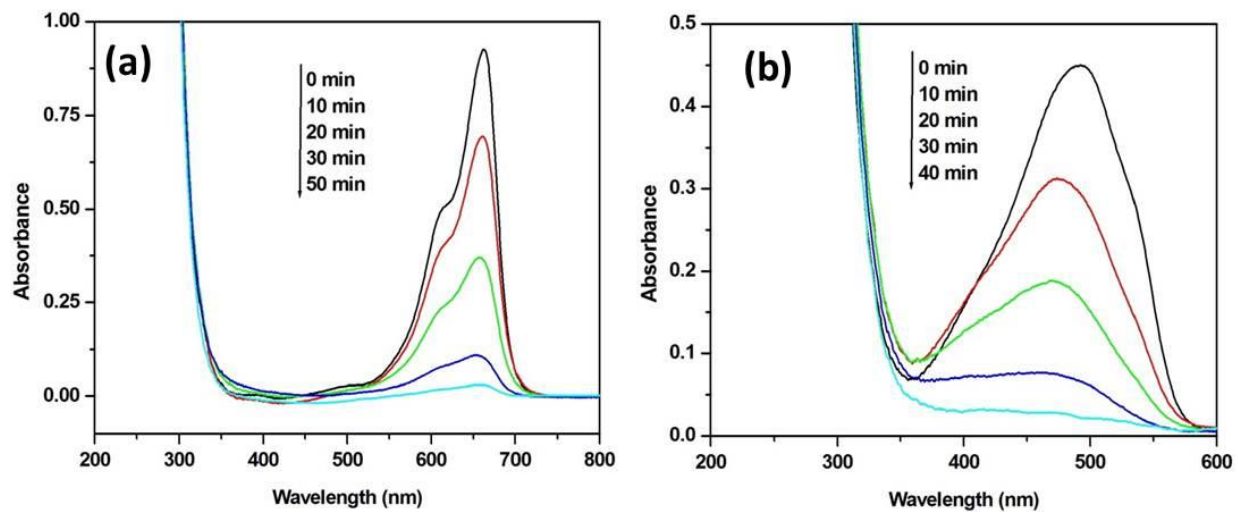
**Figure S1:** Time dependent UV-visible spectra of MB (a) and MO (b) at room temperature, respectively. Conditions: [dye] = 5 mg/L, volume of dye solution = 10 mL, $H_2O_2$ = 1 mL and amount of catalyst = 3 mg.
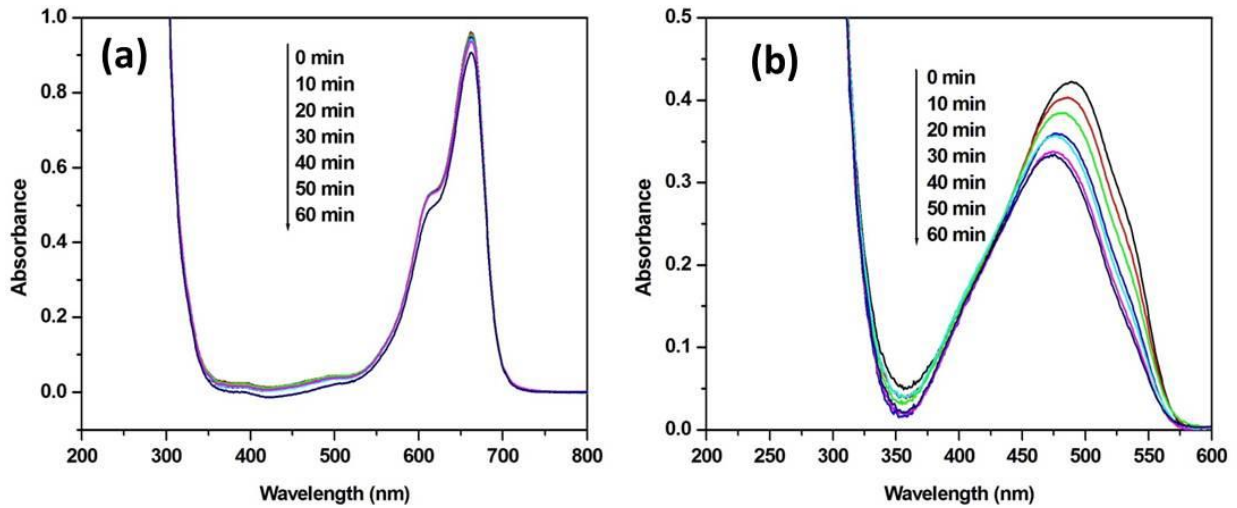


**Figure S2:** Time dependent UV-visible spectra of MB (a) and MO (b) at 35 °C, respectively. Conditions: [dye] = 5 mg/L, volume of dye solution = 10 mL, $H_2O_2$ = 1 mL and amount of catalyst = 3 mg.
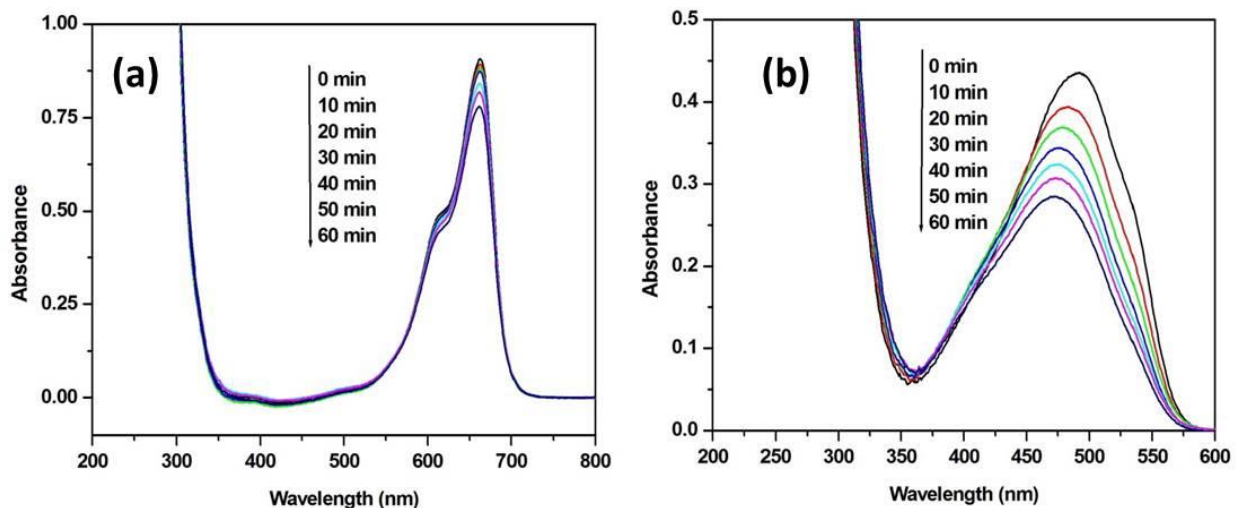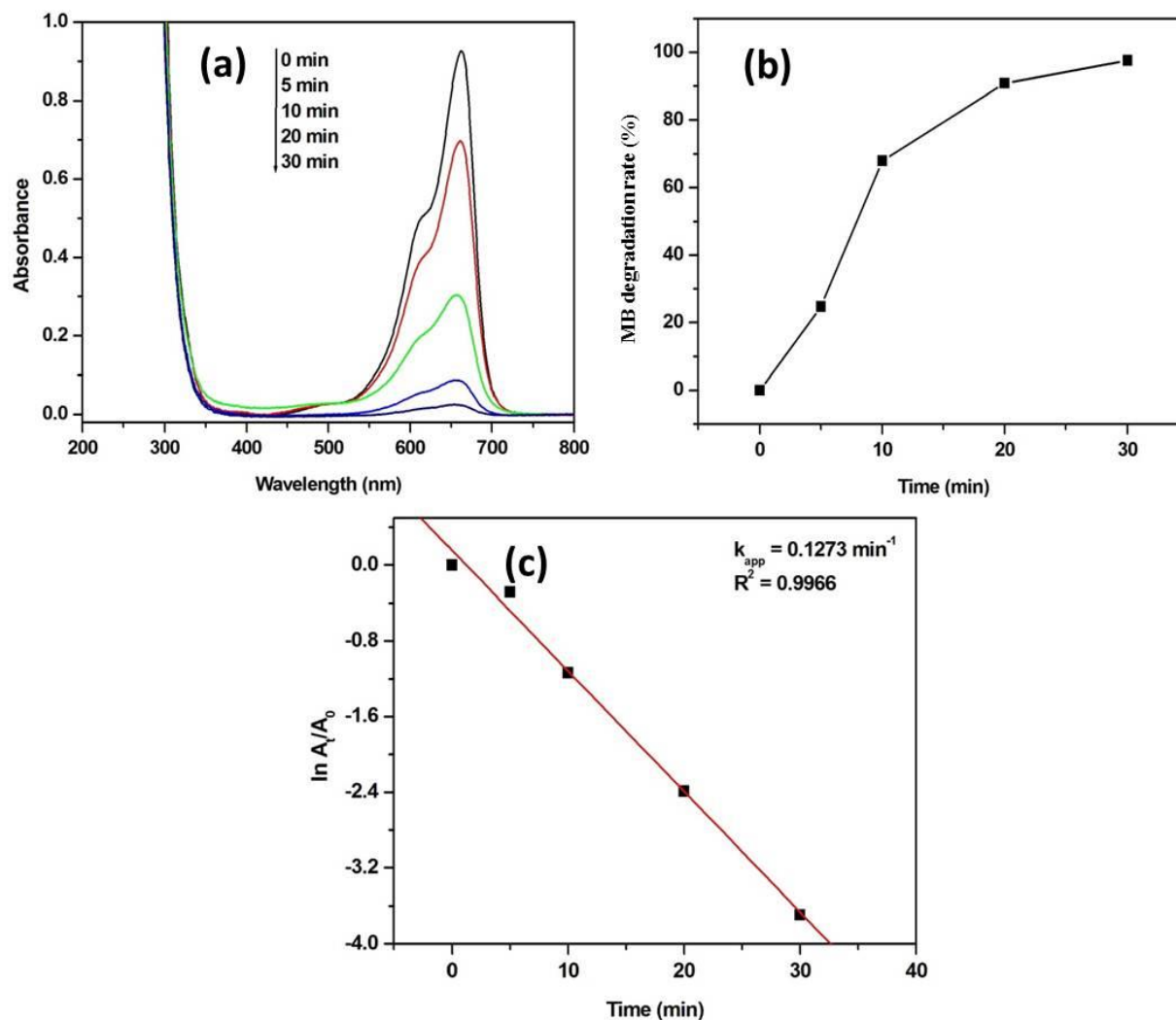
**Figure S3:** Time dependent UV-visible spectra of MB (a) and MO (b) at 65 °C, respectively. Conditions: [dye] = 5 mg/L, volume of dye solution = 10 mL, $H_2O_2$ = 1 mL and amount of catalyst = 1 mg.
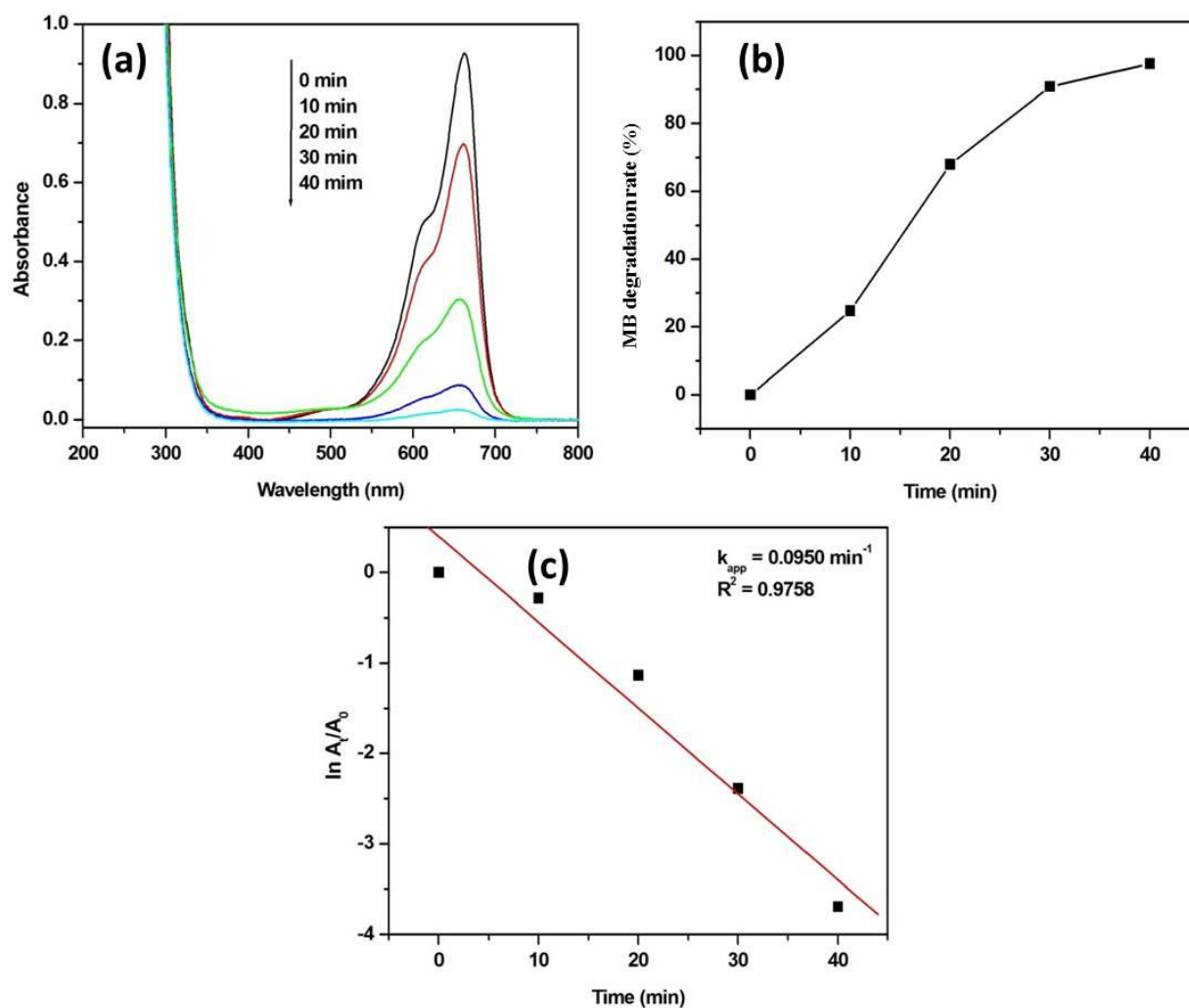
**Recyclability test: Methylene Blue (MB)**

**Figure S4:** Time dependent UV-visible spectra of MB at 65 °C (a), plot of MB degradation rate (%) verses the reaction time (b) and plot of $\ln(A_t/A_0)$ verses reaction time (c), respectively. Conditions: [dye] = 5 mg/L, volume of dye solution = 10 mL, $H_2O_2$ = 1 mL and amount of catalyst = 6 mg.

**Cycle 1:**

**Figure S5:** Time dependent UV-visible spectra of MB at 65 °C (a), plot of MB degradation rate (%) verses the reaction time (b) and plot of $\ln(A_t/A_0)$ verses reaction time (c), respectively. Conditions: [dye] = 5 mg/L, volume of dye solution = 10 mL, $H_2O_2$ = 1 mL and amount of catalyst = 6 mg.
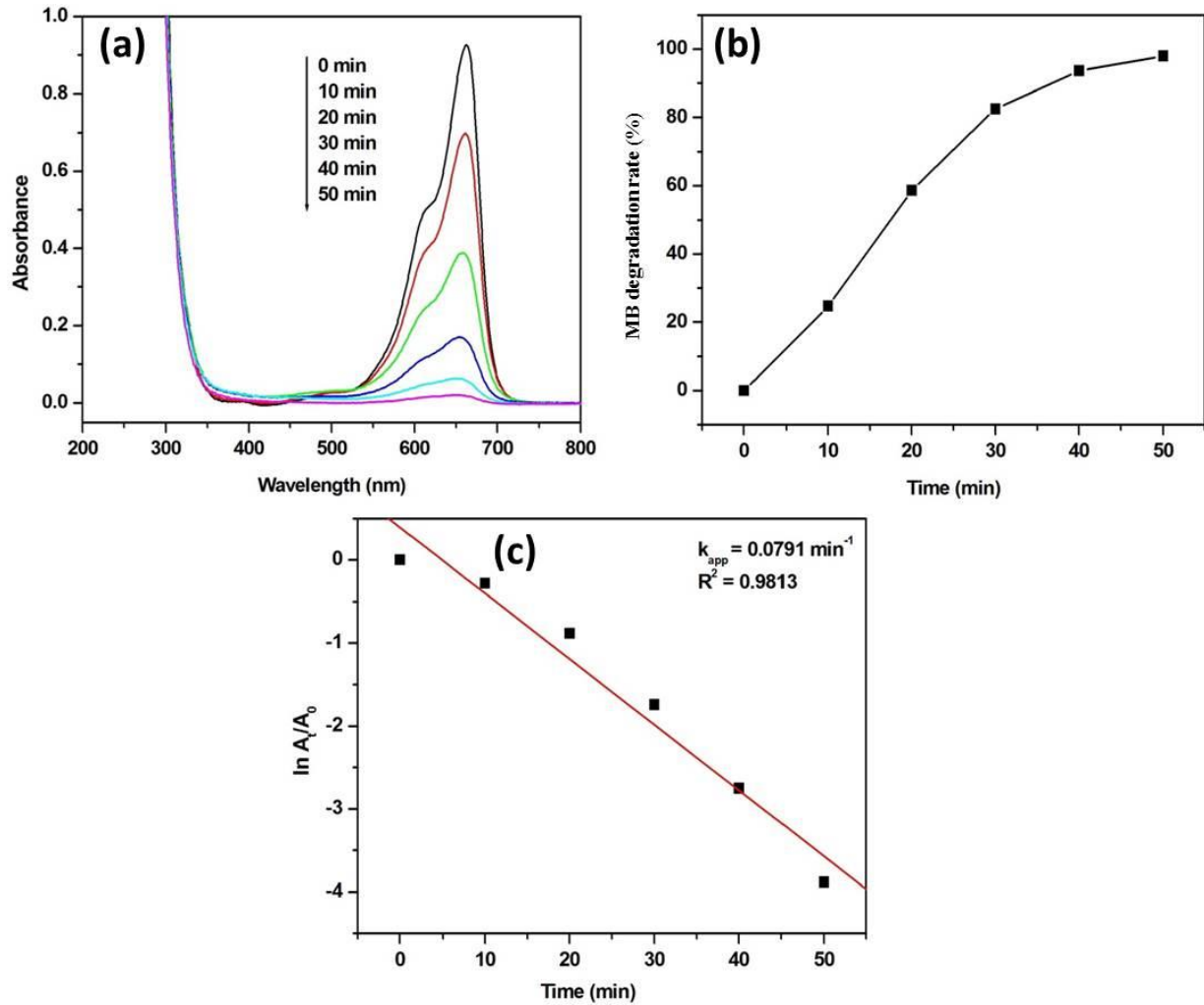
**Cycle 2:**

**Figure S6:** Time dependent UV-visible spectra of MB at 65 °C (a), plot of MB degradation rate (%) verses the reaction time (b) and plot of $\ln(A_t/A_0)$ verses reaction time (c), respectively. Conditions: [dye] = 5 mg/L, volume of dye solution = 10 mL, $H_2O_2$ = 1 mL and amount of catalyst = 6 mg.
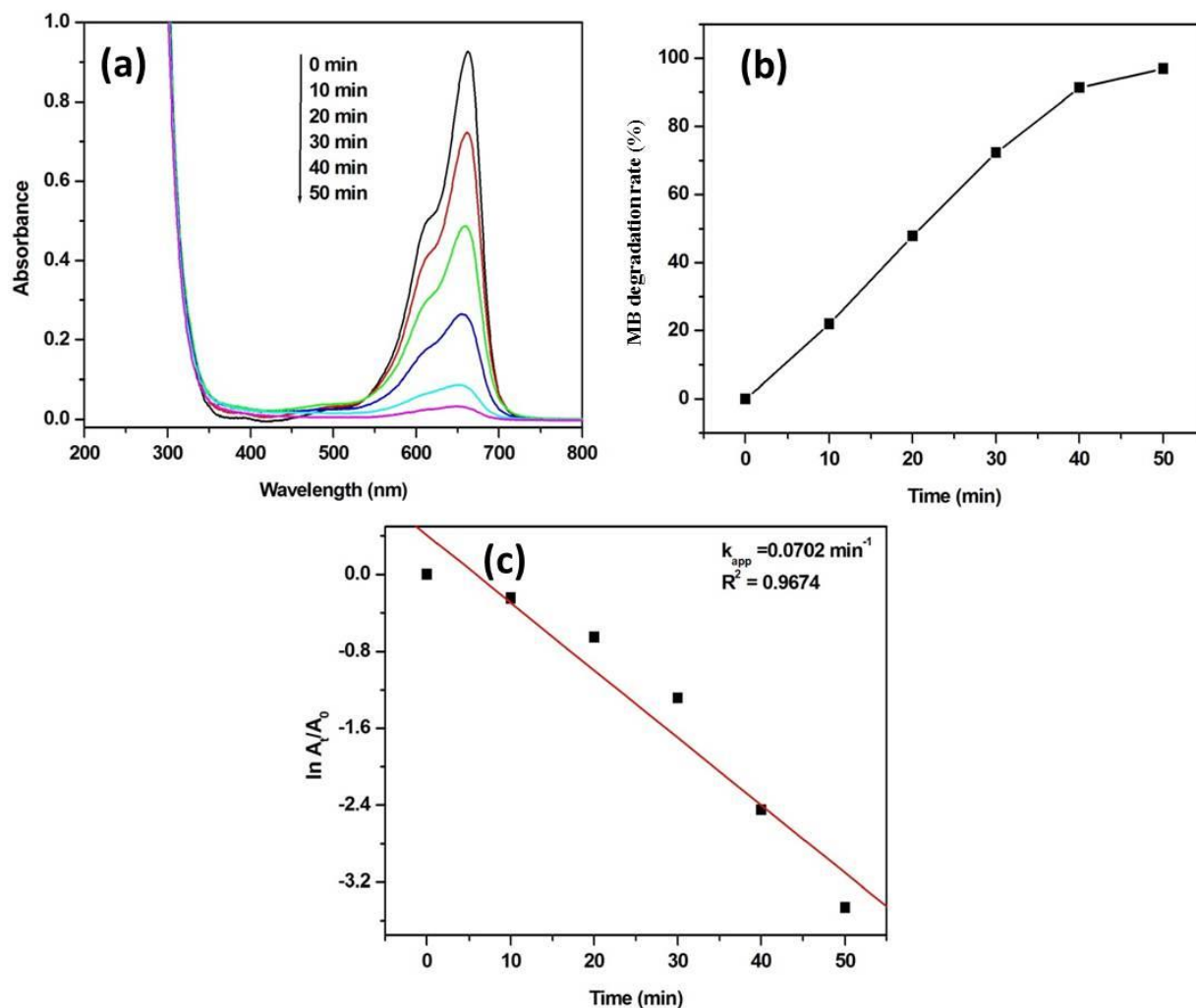
**Cycle 3:**

**Figure S7:** Time dependent UV-visible spectra of MB at 65 °C (a), plot of MB degradation rate (%) verses the reaction time (b) and plot of $\ln(A_t/A_0)$ verses reaction time (c), respectively. Conditions: [dye] = 5 mg/L, volume of dye solution = 10 mL, $H_2O_2$ = 1 mL and amount of catalyst = 6 mg.

**Cycle 4:**

**Recyclability test: Methyl Orange (MO)**

**Figure S8:** Time dependent UV-visible spectra of MO at 65 °C (a), plot of MO degradation rate (%) verses the reaction time (b) and plot of $\ln(A_t/A_0)$ verses reaction time (c), respectively. Conditions: [dye] = 5 mg/L, volume of dye solution = 10 mL, $H_2O_2$ = 1 mL and amount of catalyst = 6 mg.
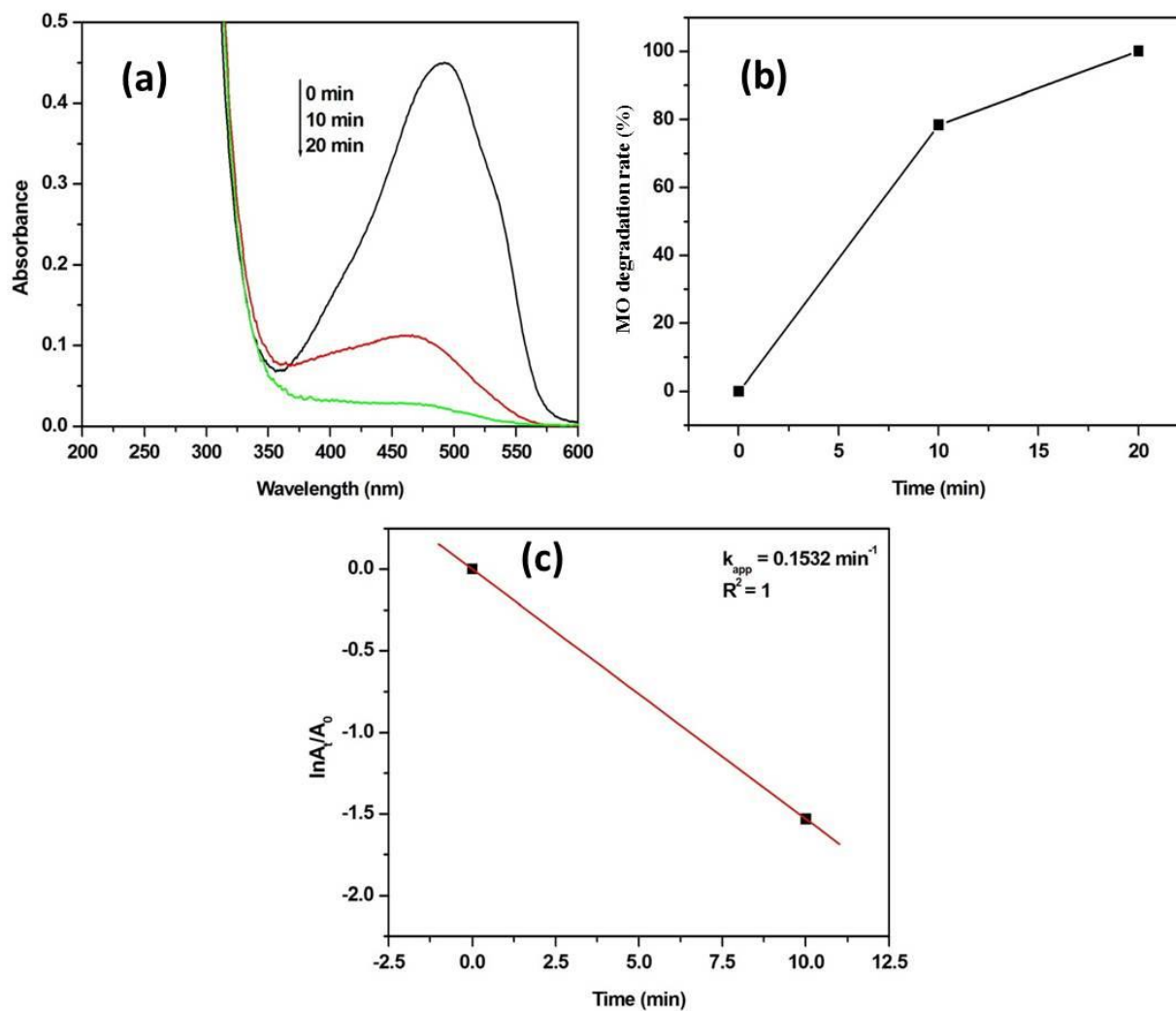
**Cycle 1:**

**Figure S9:** Time dependent UV-visible spectra of MO at 65 °C (a), plot of MO degradation rate (%) verses the reaction time (b) and plot of $\ln(A_t/A_0)$ verses reaction time (c), respectively. Conditions: [dye] = 5 mg/L, volume of dye solution = 10 mL, $H_2O_2$ = 1 mL and amount of catalyst = 6 mg.
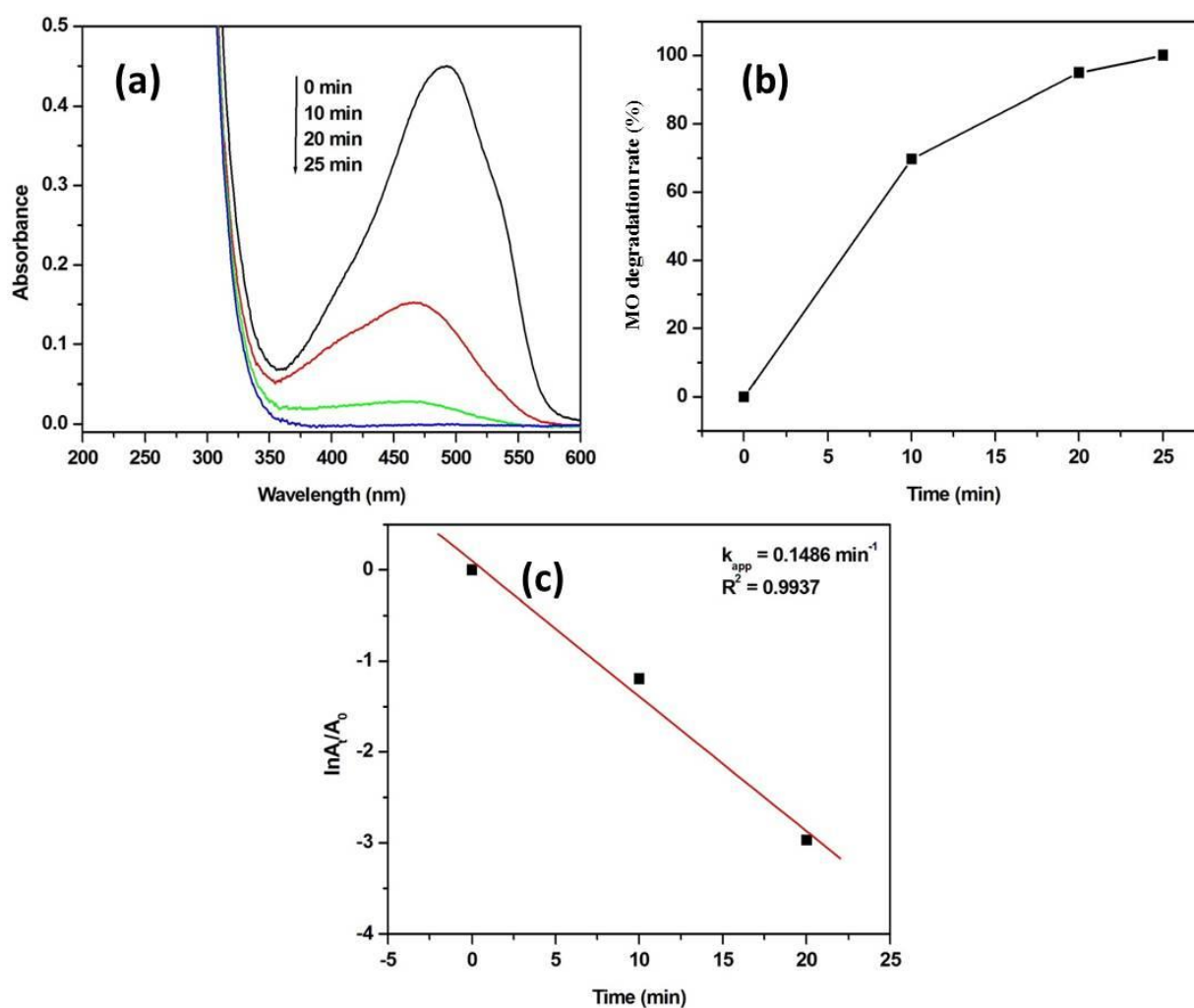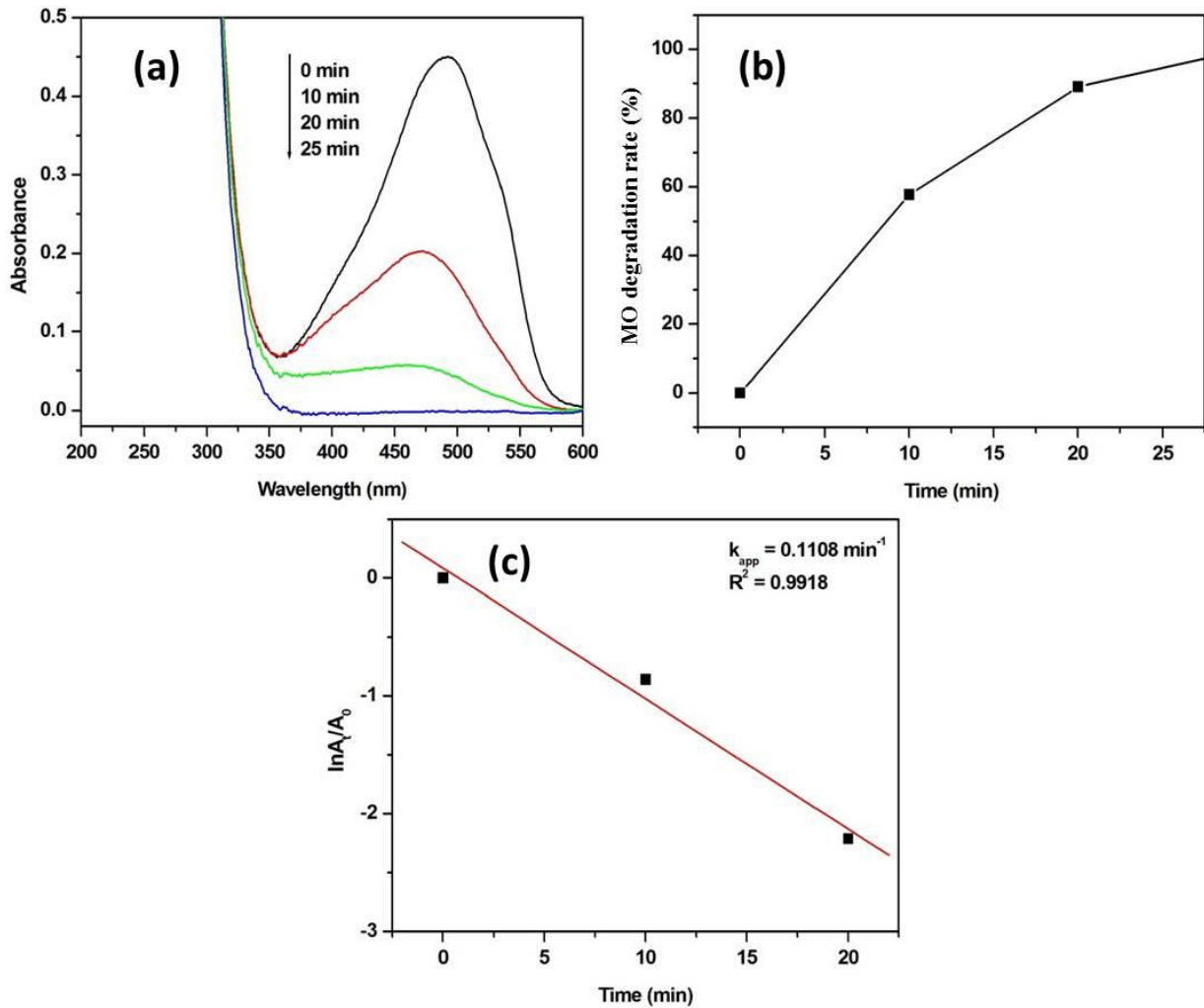
**Cycle 2:**

**Figure S10:** Time dependent UV-visible spectra of MO at 65 °C (a), plot of MO degradation rate (%) verses the reaction time (b) and plot of $\ln(A_t/A_0)$ verses reaction time (c), respectively. Conditions: [dye] = 5 mg/L, volume of dye solution = 10 mL, $H_2O_2$ = 1 mL and amount of catalyst = 6 mg.

**Cycle 3:**

**Figure S11:** Time dependent UV-visible spectra of MO at 65 °C (a), plot of MO degradation rate (%) verses the reaction time (b) and plot of $\ln(A_t/A_0)$ verses reaction time (c), respectively. Conditions: [dye] = 5 mg/L, volume of dye solution = 10 mL, $H_2O_2$ = 1 mL and amount of catalyst = 6 mg.

**Cycle 4:**