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“Effect of Co addition on catalytic activity of FePCCu amorphous alloy for methylene blue degradation”

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After degradation, some by-products in the reaction solution were observed. To identify these, the byproducts powder was extracted by centrifuge (TDZ5-WS, speed: 2500 r/min) and dried in a vacuumed oven (100 °C for 40 min). Then, the FTIR spectrum of byproducts powder was recorded on a FTIR spectrometer (Thermo Scientific, Nicolet iS10) with the baseline subtracted, as shown in Fig. S1. Several notable absorption peaks showed on the FTIR spectrum. The broad absorption peaks in the region 2800-3720 and 2362 cm$^{-1}$ were attributed to the stretching vibration of methylene groups and hydroxyl groups. The peaks in 1630 and 1380 cm$^{-1}$ were associated with C=C and C=O groups, while the peak at 1084 cm$^{-1}$ was attributed to C-N groups. All these functional groups coming from reaction products suggest the occurrence of Fenton-like reaction in MB solution using Fe$_{79.2}$Co$_4$P$_{10}$C$_6$Cu$_{0.8}$ ribbons.
Fig. S2 Raman spectrum of by-products in MB solution after-degradation using Fe$_{79.2}$Co$_4$P$_{10}$C$_6$Cu$_{0.8}$ ribbons ($T = 298$ K, $C_{MB} = 100$ mg/L, $C_{H_2O_2} = 1$ mM, ribbon dosage = 0.5 g/L, and pH = 3)

The Raman spectrum of by-products powder was recorded on a Raman Microscope (LabRAM HR UV-Visible, Horiba Jobin Yvon) as shown in Fig. S2. The obvious peaks form Fe$_2$O$_3$ (217 cm$^{-1}$), Fe$_3$O$_4$ (286 cm$^{-1}$ and 590 cm$^{-1}$), Fe$_3$O$_4$ and FeOOH (394 cm$^{-1}$) were detected. Moreover, a broad peak at 1275 cm$^{-1}$ was found, which is attributed to FeOOH, Fe$_2$O$_3$ and organic compounds, indicating the oxidation of zero-valent iron during Fenton-like reaction.