# Electrochemically induced reversible formation of carboxymethyl chitin hydrogel and tunable protein release

Fuyuan Ding, Xi Qian, Qi Zhang, Hongjie Wu,Youyu Liu,Ling Xiao, Hongbing Deng, Yumin Du,Xiaowen Shi*

School of Resource and Environmental Science and Hubei Biomass-Resource Chemistry and Environmental Biotechnology Key Laboratory, Wuhan University, Wuhan, 430079, China

Corresponding Author: * E-mail: shixwwhu@163.com.

## 1. The amount of ironin the hydrogel

The total amount of iron in the hydrogel was determined by method of phenanthroline spectrophotometric[1, 2]. Briefly, the electrodeposited hydrogel on the iron electrode was dissolved in 10 mL 0.1 M $Na_2SO_4$ containing ascorbic acid (10 mM ). Then, 10 mL of the resulted solution, 2.5 mL of hydroxylamine hydrochloride (1%),5.0mL of HAc/NaAc (pH=4.6) and 5.0 mL of phenanthroline (0.1%) were added into a 50 mL volumetric flask. Ultrapure water was added to the scale. The volumetric flask was shaken to mix the solution. The final solution was put still for 10 min before test. The $Fe^{3+}$ concentration in the solution was recorded on a UNICO UV-2000 Spectrophotometer at 510 nm. The solution without $Fe^{3+}$ was used as a control. Ferrous ammonium sulfate was used for calibrating the $Fe^{3+}$ analysis.

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