Electronic supplementary material

Fe$^{3+}$-catalyzed degradation of organic mercury as a simple post-column interface for speciation of mercury in the high-performance liquid chromatography-catalytic cold vapor-atomic fluorescence spectrometry

Xiaolai Zhang $^a$, Deluo Ji $^a$, Yan Zhang $^a$, Yong Lu $^a$, Junhua Fu $^c$, Zhenhua Wang $^b$, *

$^a$ College of Chemistry and Chemical Engineering, Shandong University, Jinan 250014, China.
$^b$ Shandong Analysis and Test Center, Qilu University of Technology (Shandong Academy of Sciences), Jinan 250014, China.
$^c$ Jinan Ecology and Environment Monitoring Center of Shandong Province, Jinan 250101, China.

* Corresponding author.

E-mail addresses: wangzhh@qlu.edu.cn
Tel: +86-0531-68606173
**Fig. S1** The effect of Fe\(^{3+}\) concentration on the fluorescence signal in HPLC-CCV-AFS. Each mercury species was present at 5 µg L\(^{-1}\). Error bars show the standard deviation (n=3).
**Fig. S2** The effect of Fe$^{3+}$ concentration on the fluorescence signal of organic mercury in FI-CCV-AFS. Each mercury species was present at 5 µg L$^{-1}$. Other conditions were given in Table 1. Error bars show the standard deviation (n=3).
**Fig. S3** The effect of L-cysteine concentration on the fluorescence signal. Each mercury species was present at 5 µg L\(^{-1}\). Other conditions were given in Table 1. The concentration of ammonium acetate was 0.06 mol L\(^{-1}\). Error bars show the standard deviation (n=3).
**Fig. S4** The effect of NH$_4$Ac concentration on the fluorescence signal. Each mercury species was present at 5 µg L$^{-1}$. The concentration of L-cysteine was 0.5 g L$^{-1}$. Error bars show the standard deviation (n=3).
**Fig. S5** The effect of KBH₄ concentration on the fluorescence signal. Each mercury species was present at 5 µg L⁻¹. Other conditions were given in Table 1. The concentration of HCl was 10% (V/V). Error bars show the standard deviation (n=3).
Fig. S6 The effect of the HCl carrier on the fluorescence signal. Each mercury species was present at 5 µg L$^{-1}$ Other conditions were given in Table 1. The concentration of KBH$_4$ was 0.5% (m/V). Error bars show the standard deviation (n=3).
**Fig. S7** The effect of the carrier gas flow rate on the fluorescence signal. Each mercury species was present at 5 µg L$^{-1}$. Other conditions were given in Table 1. Flow rate of the shielding gas was 900 mL min$^{-1}$. Error bars show the standard deviation (n=3).
**Fig. S8** The effect of the shielding gas flow rate on the fluorescence signal. Each mercury species was present at 5 µg L$^{-1}$. Other conditions were given in Table 1. Flow rate of the carrier gas was 300 mL min$^{-1}$. Error bars show the standard deviation (n=3).
**Fig. S9** Typical chromatograms of mercury species. (1) HPLC-CCV-AFS with mobile phase A and Fe$^{3+}$ catalyst. (2) HPLC-UV-CV-AFS with post-column oxidant and UV irradiation. (3) HPLC-CCV-AFS with mobile phase B and Fe$^{3+}$ catalyst. Each mercury species was present at 5 µg L$^{-1}$. Other conditions were given in Table 1.

**References**