Supporting Information

Efficient elimination of Cr(VI) in aqueous phase using nano zero-valent iron synthesized with Ginkgo biloba extracts: Enhanced mechanism and reduced toxicity

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Equation S1:
\[
\eta = \left(\frac{C_0 - C_t}{C_0}\right) \times 100\%
\]

Where \(C_0\) and \(C_t\) are the initial concentration of Cr(VI) in the solution and the concentration measured at time \(t\) (mg/L) and \(\eta\) represents the removal rate of Cr(VI)

Equation S2:
\[
\ln\left(\frac{C_t}{C_0}\right) = -k_1t
\]

Equation S3:
\[
\frac{t}{q_t} = \frac{1}{k_2q_e^2} + \frac{t}{q_e}
\]

Equation S4:
\[
Q_t = k_3t^{0.5} + C
\]

Equation S5:
\[
Q_t = \left(\frac{1}{\beta}\right) \ln (\alpha \beta) + \left(\frac{1}{\beta}\right) \ln (t)
\]

Where \(C_0\) and \(C_t\) represent the initial concentration of Cr(VI) and the concentration at time \(t\) (mg/L), respectively. \(q_e\) (mg/g) and \(q_t\) (mg/g) are the removal capacities of Cr(VI) at equilibrium and time \(t\), respectively. \(k_1\) (min\(^{-1}\)) reflects the rate constant for the pseudo-first order reaction. \(k_2\) (g/mg·min) represents the rate constant of the pseudo-secondary reaction. \(k_3\) (mg/g·min\(^{0.5}\)). \(C\) is the rate constants and the corresponding Y-axis intercepts \((q_t-t^{0.5})\) in the intraparticle diffusion model. \(\alpha\) (mg/g·min) and \(\beta\) (mg/g) represent the constants of the Elovich model.
**Table S1** Fitting parameters of the four kinetic models for the removal of Cr(VI) using GB-nZVI at different pH conditions

<table>
<thead>
<tr>
<th>pH</th>
<th>t/min</th>
<th>Pseudo-first-order</th>
<th></th>
<th>Pseudo-second-order</th>
<th></th>
<th>Intra-particle diffusion</th>
<th></th>
<th>Elovich</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$k_1$ (min$^{-1}$)</td>
<td>$R^2$</td>
<td>$k_2$ (g·mg$^{-1}$·min$^{-1}$)</td>
<td>$R^2$</td>
<td>$k_3$ (g·mg$^{-1}$·min$^{-1/2}$)</td>
<td>$R^2$</td>
<td>$\beta$ (mg·g$^{-1}$)</td>
<td>$R^2$</td>
</tr>
<tr>
<td>0-3</td>
<td>5-15</td>
<td>0.657</td>
<td>0.994</td>
<td>1.010</td>
<td>0.999</td>
<td>2.754</td>
<td>0.751</td>
<td>4.694</td>
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<tr>
<td>3</td>
<td>5-15</td>
<td>0.204</td>
<td>0.989</td>
<td>0.200</td>
<td>0.889</td>
<td>0.662</td>
<td>0.898</td>
<td>1.094</td>
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<td>0.989</td>
<td>2.327</td>
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</tbody>
</table>
Figures

Fig. S1 Removal of Cr(VI) by GB-nZVI, ML-nZVI and HL-nZVI (a, b); Effect of pH (c) and temperature (d) on the removal of Cr(VI); and pHpzc of GB-nZVI (e)

Fig. S2 Effect of temperature on the removal of Cr(VI)