Supplementary Materials

A biosorption-pyrolysis process for removal of Pb from aqueous solution and subsequent immobilization of Pb in the char

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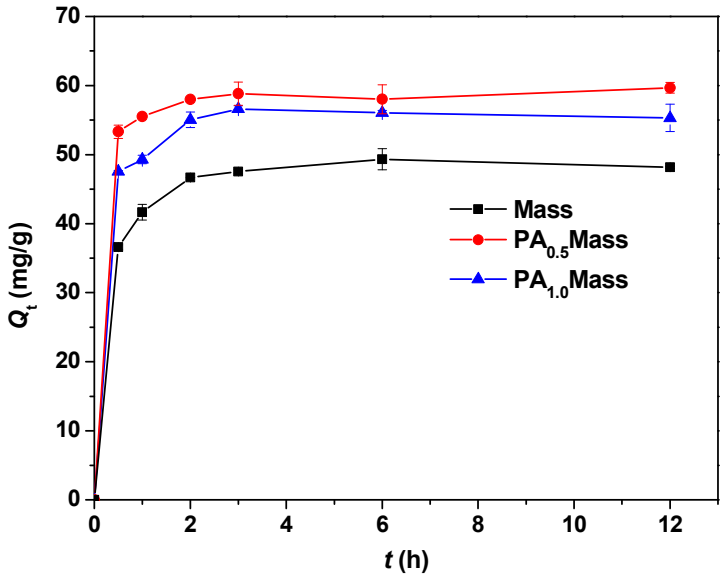

Figure S1. Change of the quantity of Pb adsorbed (Q_t) by the three biosorbents (Mass, $PA_{0.5}$Mass and $PA_{1.0}$Mass) with the contact time (t). The initial Pb concentration was 150 mg/L, and the initial pH was 5.0 for all the sorption experiments. The kinetic data was analyzed by fitting with the *pseudo*-second order model shown in the Eq. S1:

$$\frac{t}{Q_t} = \frac{1}{k \cdot Q_e^2} + \frac{t}{Q_e} \qquad \text{(S1)}$$

where Q_e stands for the simulated equilibrium adsorption (mg/g), and k is the sorption rate constant (g/(mg·h)). The fitting results are shown in Table S1.

Table S1. Parameters obtained by fitting the kinetic data (in Figure S1) with the *pseudo*-second order model (Eq. S1).

Parameters	Q_e (mg/g)	k (g/(mg·h))	R^2
Mass	48.9	0.182	0.994
$PA_{0.5}$Mass	59.8	0.208	0.998
$PA_{1.0}$Mass	55.8	0.406	0.996

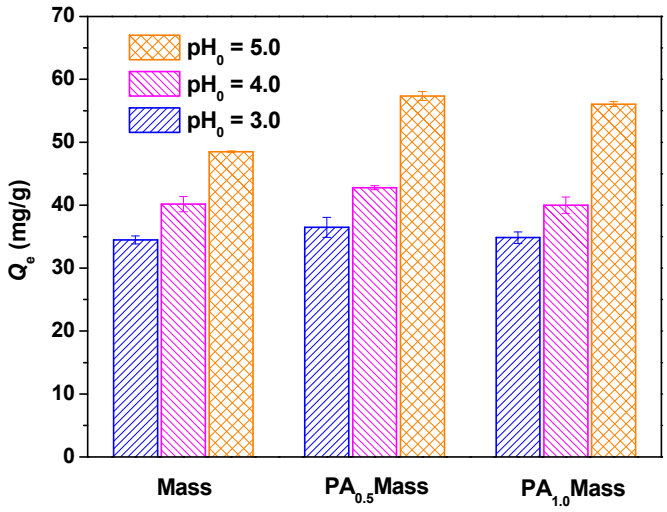

Figure S2. Change of the quantity of Pb adsorbed after equilibrium (Q_e) with the initial pH (pH_0). The initial Pb concentration was 150 mg/L, and the contact time was 6 h for all the sorption experiments. Here, only acidic pH (3.0–5.0) was tested, because a pH > 6.0 will lead to the precipitation of Pb in the form of $Pb(OH)_2$ (Farooq U, et al. *Bioresour. Technol.* **2010**, *101*, 5043-5053).

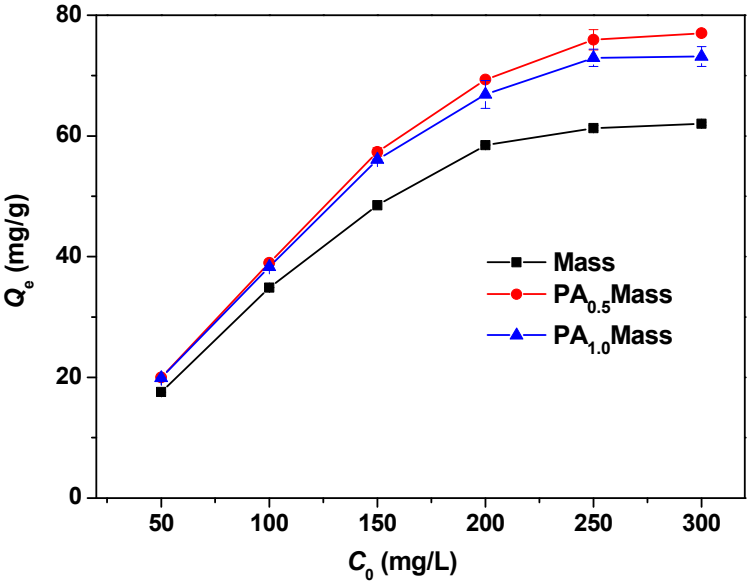

Figure S3. Change of the quantity of Pb adsorbed after equilibrium (Q_e) with the initial concentration (C_0). The initial pH was 5.0, and the contact time was 6 h for all the sorption experiments.