**Supporting information**

**Lead removal via biochars obtained from slow pyrolysis of dry and soaked pecan shell biomass**

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Figure S1. TGA decomposition curves for NPSB and WPSB



Figure S2. FTIR spectra for NPSB and WPSB

Table S1. Ash content of NPSB and WPSB, masses are given in grams.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Biochar | Repetition 1 | Repetition 2 | Repetition 3 | Average Ash % |
| Initial Mass | Final Mass | Ash % | Initial Mass | Final Mass | Ash % | Initial Mass | Final Mass | Ash % |
| NPSB | 1.15 | 0.056 | 4.91 | 1.01 | 0.054 | 5.09 | 1.13 | 0.058 | 5.07 | 5.02 |
| WPSB | 1.09 | 0.048 | 4.36 | 1.04 | 0.047 | 3.33 | 1.04 | 0.044 | 4.20 | 3.96 |

Figure S3. EDX spectra of NPSB and WPSB before and after Pb2+ adsorption



A) EDX spectra for NPSC before Pb2+ adsorption, B) EDX spectra for WPSC before Pb2+ adsorption, C) EDX spectra for NPSC after Pb2+ adsorption, and D) EDX spectra for WPSC after Pb2+ adsorption

Figure S4. First order kinetics linearized plot log(qe-qt) vs t



Table S2. Pseudo-First order plots for lead adsorption at pH 5 and 150 ppm.

|  |
| --- |
| Pseudo-second order parameters on NPSB and WPSB |
| Char | Initial conc. (ppm) | Q exp. (mg/g) | Q calc. (mg/g) | K1  (g mg-1 h-1) | R2 |
| NPSB | 150 | 61.9 | 60.8 | 0.0676 | 0.912 |
| WPSB | 150 | 71.5 | 71.3 | 0.0678 | 0.768 |