## Accepted Manuscript

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PII: S2213-3437(18)30162-3

DOI: https://doi.org/10.1016/j.jece.2018.03.041

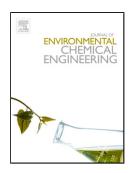
Reference: JECE 2282

To appear in:

Received date: 17-12-2017 Revised date: 18-3-2018 Accepted date: 19-3-2018

Please cite this article as: Anjali Achazhiyath Edathil, Ismaila Shittu, Jerina Hisham Zain, Fawzi Banat, Mohammad Abu Haija, Novel magnetic coffee waste nanocomposite as effective bioadsorbent for Pb(II) removal from aqueous solutions, Journal of Environmental Chemical Engineering https://doi.org/10.1016/j.jece.2018.03.041

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### ACCEPTED MANUSCRIPT

# Novel magnetic coffee waste nanocomposite as effective bioadsorbent for Pb(II) removal from aqueous solutions

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#### **Highlights**

- A low cost magnetic adsorbent was successfully synthesized from coffee waste by embedding Fe<sub>3</sub>O<sub>4</sub> nanoparticle.
- Effect of Fe<sub>3</sub>O<sub>4</sub> loading onto coffee waste was evaluated for Pb (II) removal.
- Adsorption data fitted best with Langmuir model and followed pseudo-second order kinetics indicating chemisorption.
- Maximum monolayer adsorption capacity for Pb (II) at 25°C was 41.15 mg/g.
- Thermodynamic analysis revealed that sorption is endothermic and spontaneous in nature.
- Oxygen rich surface functional group plays an important role in enhancing the adsorption capacity.

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