

Association of Metallurgical Engineers of Serbia
Faculty of Technology and Metallurgy, University of Belgrade
Institute for Technology of Nuclear and Other Mineral Raw Materials
Institute of Chemistry, Technology and Metallurgy
Vinca Institute of Nuclear Sciences
Serbian Foundrymen's Society

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2019

Metallurgical & Materials
Engineering Congress
of South-East Europe

BOOK OF ABSTRACTS

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Branislav Marković
Vaso Manojlović

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ALKALI MODIFIED CORN COB HYDROCHAR AS BIOSORBENT OF Mn^{2+} IONS FROM AQUEOUS SOLUTIONS

Marija Petrović¹, Jelena Petrović¹, Tatjana Šošćarić¹, Marija Kojić¹, Marija Koprivica¹, Mirko Grubišić¹, Zorica Lopičić¹

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In this study corn cob hydrochar was investigated as potential material for the biosorption process. The corn cob hydrochar obtained at different carbonization temperatures (180, 200 and 220°C) were examined as potential adsorbent of Mn^{2+} from aqueous solution.

The adsorption capacity of corn cob hydrochar obtained at different carbonization temperatures followed the decreasing order: 220°C > 200°C > 180°C

To enhance adsorption potential, hydrochar with best adsorption abilities obtained at 220°C (HC) was subjected to cold alkaline modification. The modified corn cob (M-HC) was prepared through a chemical treatment process using 2M KOH solution. Preliminary results showed that the M-HC exhibited excellent adsorption characteristics for Mn^{2+} removal from aqueous solution. The maximum adsorption capacity (q_{max}) of M-HC and HC was 31.83 and 7.83 mg/g, respectively.

It can be concluded that modified corn cob hydrochar can be used as a low-cost, eco-friendly and promising adsorbent with a good adsorption capacity for Mn ions removal from aqueous solutions.

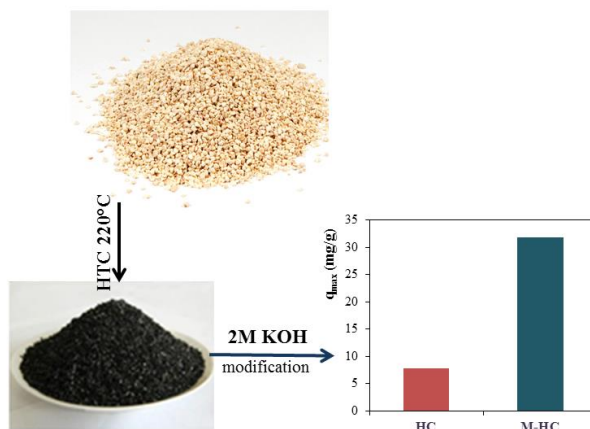


Figure: Adsorption capacity of HC and M-HC for Mn^{2+} removal from aqueous solutions

Keywords: corn cob, hydrothermal carbonization, alkali modification, Mn^{2+} biosorption.