

# Effect of exchangeable cation in clays on the yield and quality of the bio-oil during microwave pyrolysis of cellulose

Alisa Doroshenko<sup>1</sup>, Ihor Pylypenko<sup>2</sup>, Simona Gromovaite<sup>3</sup>, James Clark<sup>1,\*</sup>, and Vitaliy Budarin<sup>1,\*</sup>

<sup>1</sup> Green Chemistry Centre of Excellence, The University of York, Heslington, York YO10 5DD; [greenchemistry@york.ac.uk](mailto:greenchemistry@york.ac.uk)

<sup>2</sup> The National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Peremohy Ave, 37, Kyiv, Ukraine, 03056; [mail@kpi.ua](mailto:mail@kpi.ua)

<sup>3</sup> College of Science and Engineering, The University of Edinburgh, 10 Max Born Crescent, Edinburgh EH9 3BF; [sciengmail@ed.ac.uk](mailto:sciengmail@ed.ac.uk)

\* Correspondence: [vitaliy.yorkuni@mail.ru](mailto:vitaliy.yorkuni@mail.ru) Vitaliy Budarin, website: [www.vitaliybudarin.com](http://www.vitaliybudarin.com); [james.clark@york.ac.uk](mailto:james.clark@york.ac.uk) James Clark

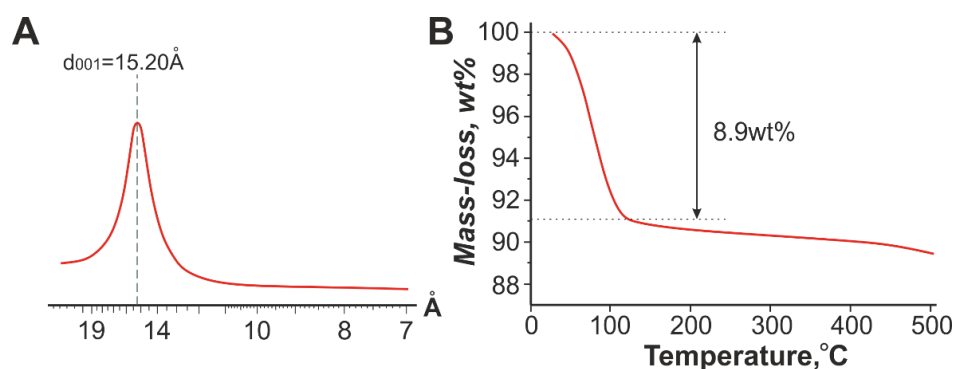


Figure 1S. A) XRD analysis of the original bentonite; B) Thermal analysis of the original bentonite

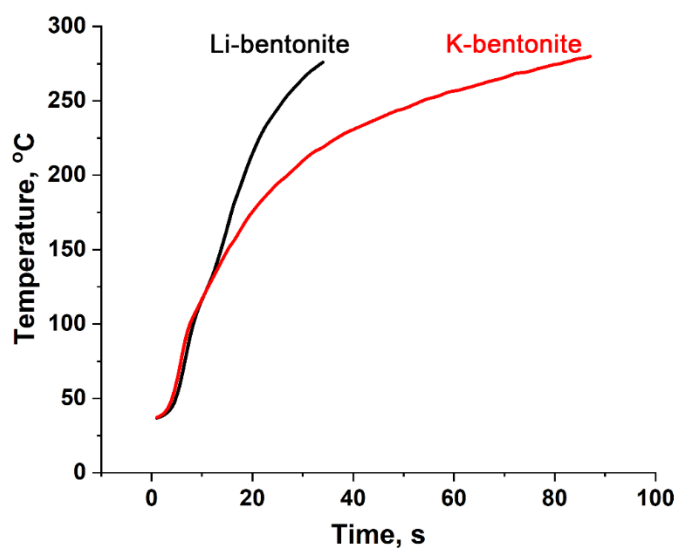


Figure 2S. Integrated forms of MW-traces, showing that Li-bentonite reaches 280°C in 34s, while K-bentonite gains 280°C in 87s

Supplementary materials

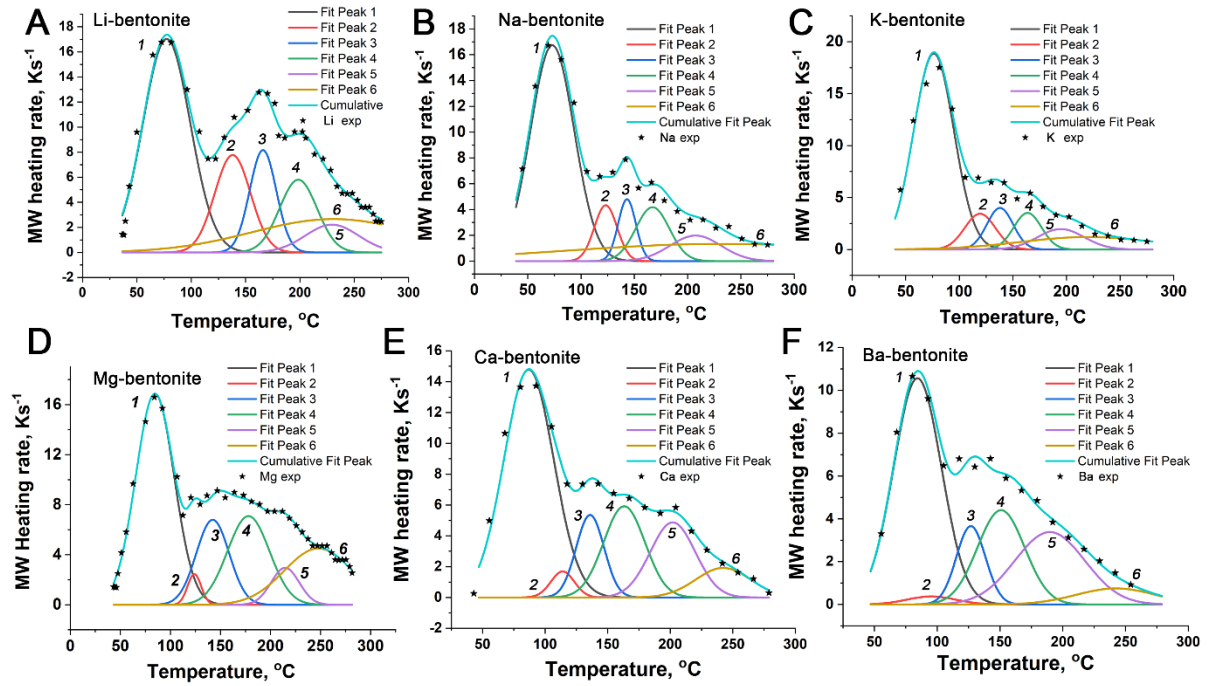


Figure 3S. Gaussian deconvolution of the MW-traces: A) Li-bentonite; B) Na-bentonite; C) K-bentonite; D) Mg-bentonite; E) Ca-bentonite; F) Ba-bentonite. Notably, as it is seen the 2nd peaks of divalent cations-samples were exceptional and excluded from the analysis (main paper body, figure 2C-D) due to its strong overlapping with physisorbed water