

Understanding the Cation Exchange Affinity in Modified-MMT Catalysts for the Conversion of Glucose to Lactic Acid

S.M. Shahrul Nizan Shikh Zahari^{1,a,*}, Nur Fatin Izzati Che Sam^{1,*}, Kholoud M. H. Elzaneen¹, Mahfuzah Samirah Ideris¹, Farah Wahida Harun¹, and Hazeeq Hazwan Azman²

Electronic supporting information

Table S1. The structural properties of CE-MMTs by N₂-BET.

Catalyst	Pore volume (cm ³ g ⁻¹)	Average pore diameter (nm)
S-MMT	0.378	9.43
Fe-MMT	0.506	11.67
Cu-MMT	0.520	10.36
Zn-MMT	0.613	19.82

Table S2. Lewis acid (LA) and Brønsted acid (BA) sites of CE-MMTs estimated by pyridine-ATR-FTIR analysis.

Catalyst	LA (u ²)	BA (u ²)
S-MMT	46.02	10.5
Fe-MMT	8.17	2.19
Cu-MMT	18.38	1.78
Zn-MMT	18.67	1.43

*The quantities of LA and LB surface sites were estimated by integrating area under peaks of pyridine FTIR spectra at 1445 - 1447 cm⁻¹ (pyridine bound to LA) and 1542 – 1558 cm⁻¹ (pyridine bound to BA) (see Figure S2).

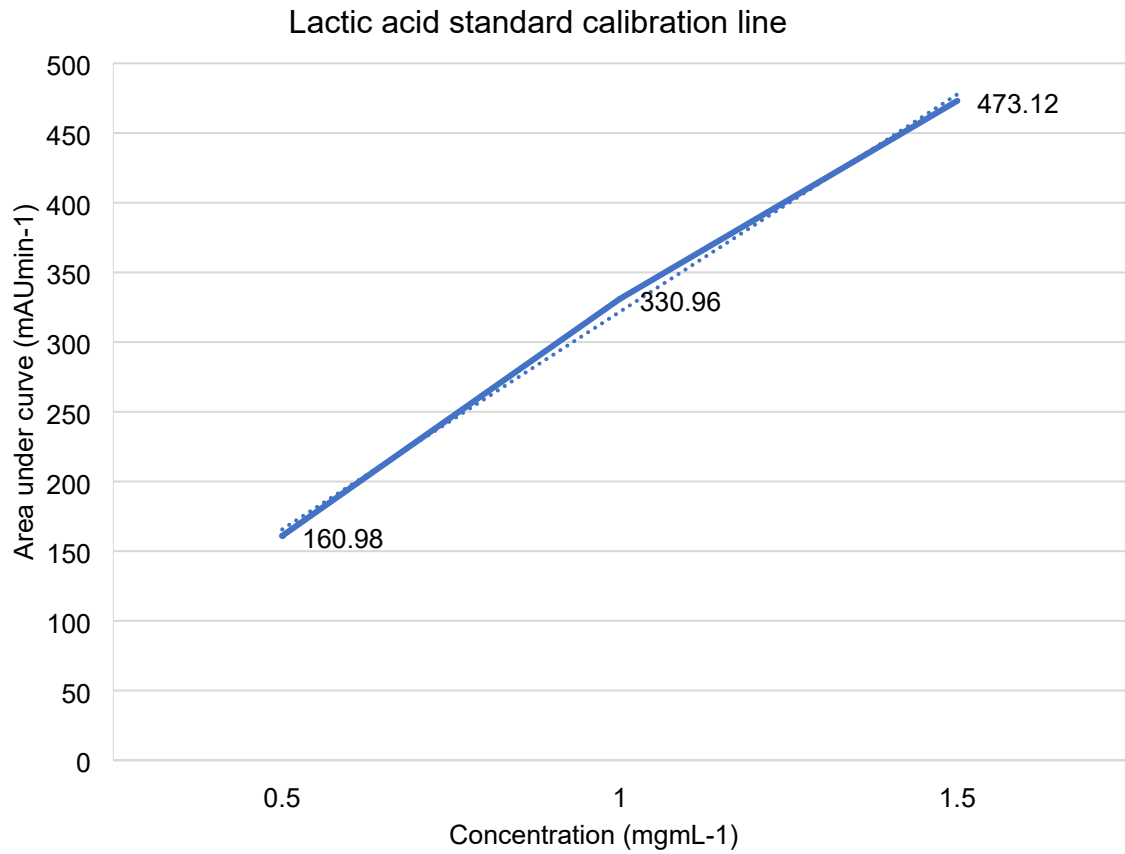


Figure S1. A standard calibration curve for standard solutions of lactic acid analysed by HPLC.

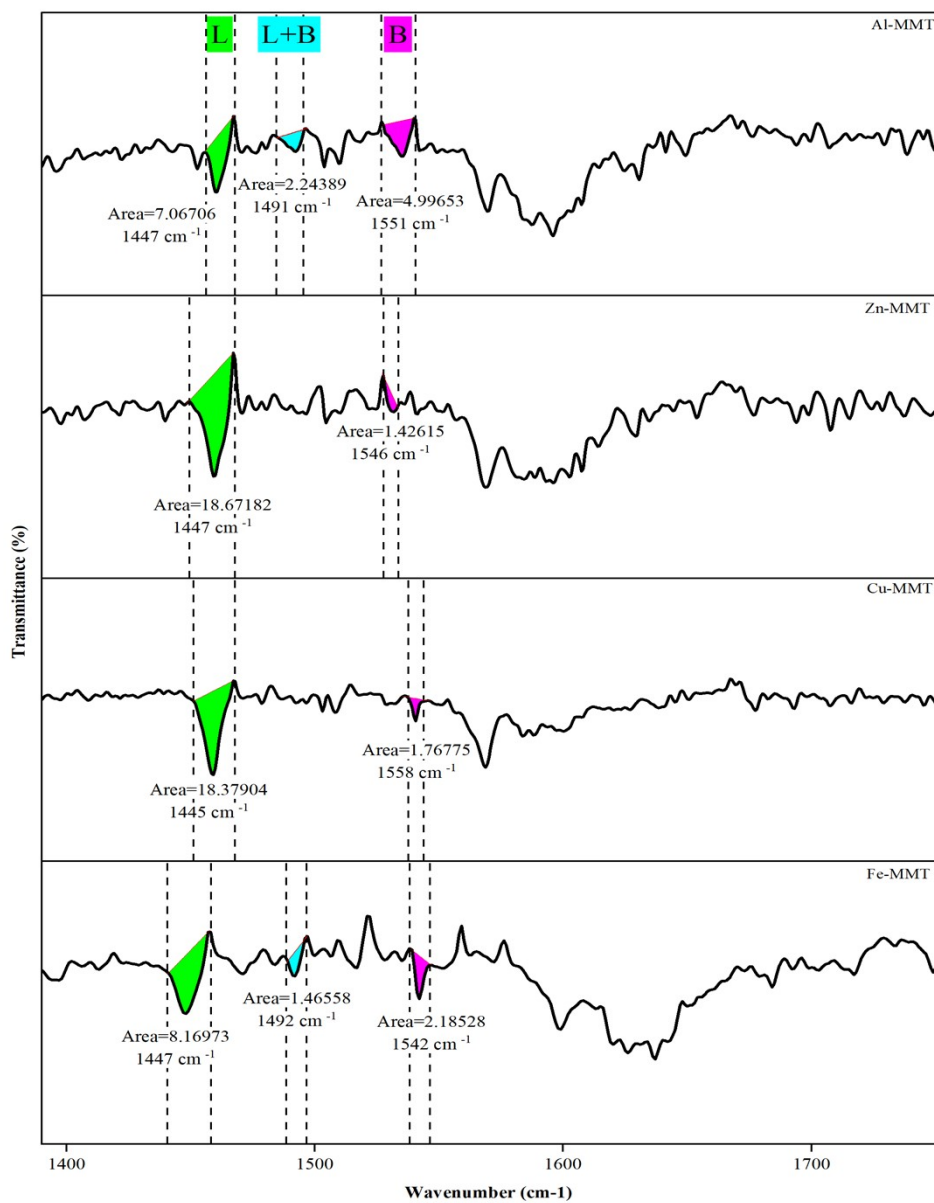


Figure S2. Integration of area under peaks for pyridine-FTIR spectra at 1445 - 1447 cm⁻¹ (pyridine bound to Lewis acid) and 1542 - 1558 cm⁻¹ (pyridine bound to Brønsted acid).