

# Imidazolium ionic liquids as compatibilizer agents for microcrystalline cellulose/epoxy composites

Eduardo Fischer Kerche<sup>a,\*</sup>, Vinícius Demétrio da Silva<sup>b</sup>, Nicholas Alves Salles<sup>a</sup>, Henri Stephan Schrekker<sup>b</sup>, Sandro Campos Amico<sup>a</sup>

<sup>a</sup> PPGE3M, Federal University of Rio Grande do Sul – UFRGS, Av. Bento Gonçalves 9500, Porto Alegre, RS, 91501-970, Brazil.

<sup>b</sup> Laboratory of Technological Processes and Catalysis, Federal University of Rio Grande do Sul – UFRGS, Av. Bento Gonçalves 9500, Porto Alegre, RS, 91501-970, Brazil.

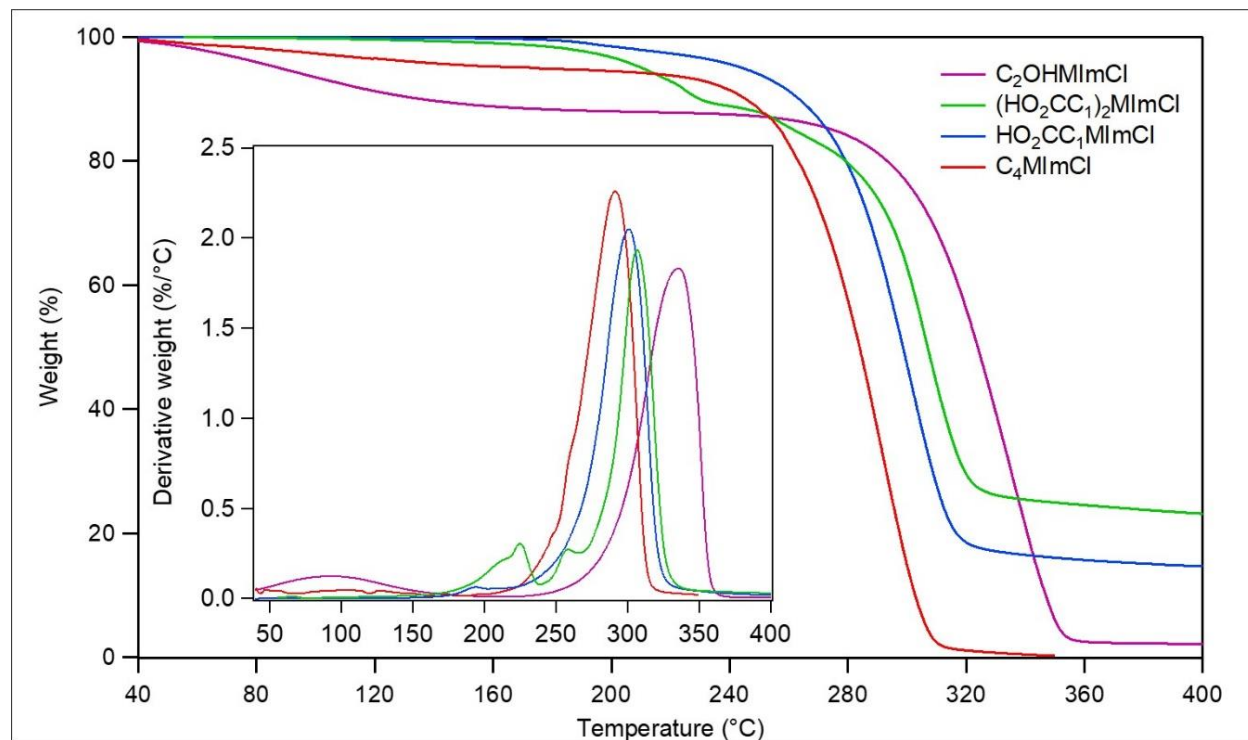


Figure S1: TG and DTG curves of **C<sub>4</sub>MImCl** (red), **HO<sub>2</sub>CC<sub>1</sub>MImCl** (blue), **(HO<sub>2</sub>CC<sub>1</sub>)MImCl** (green) and **C<sub>2</sub>OHMImCl** (purple), used as compatibilizers for the MCC/epoxy composites.

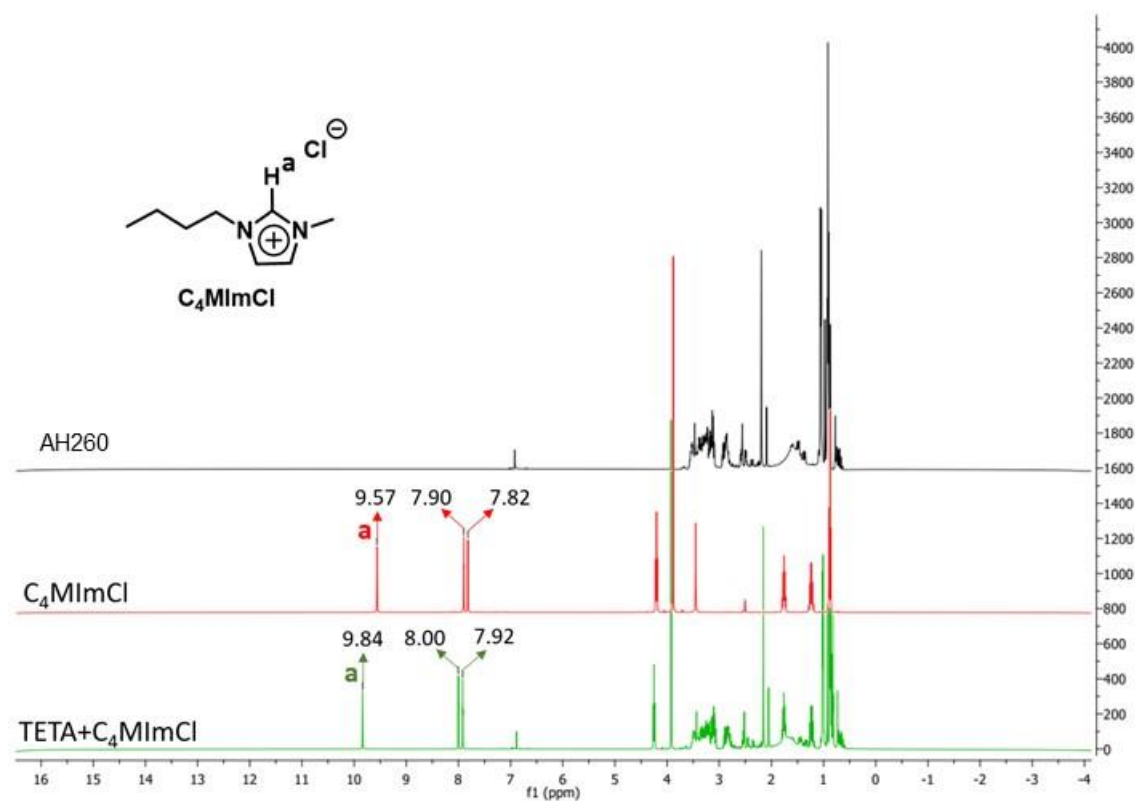


Figure S2: <sup>1</sup>H NMR spectra (400 MHz, DMSO-*d*<sub>6</sub>) of AH260 hardener (based on triethylenetetramine (TETA)) in black, C<sub>4</sub>MImCl in red, and C<sub>4</sub>MImCl + AH260 in green, where “a” represents the most acidic hydrogen of the imidazolium ring (C<sub>2</sub>-H).

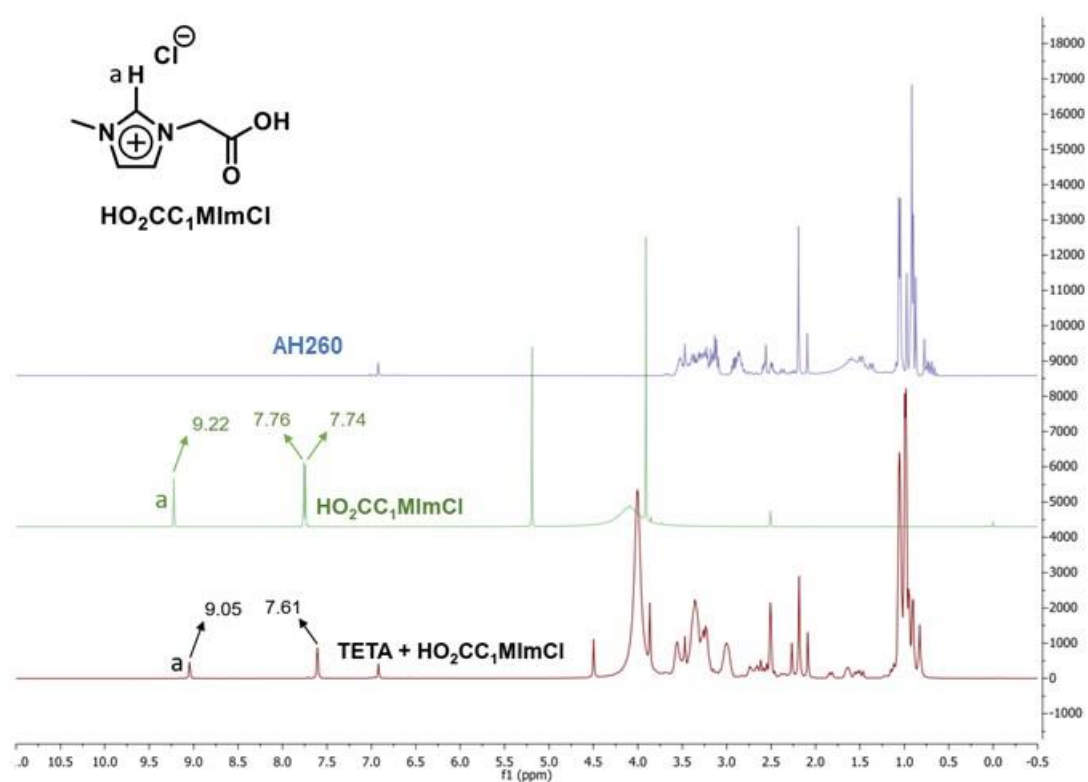


Figure S3:  $^1\text{H}$  NMR spectra (400 MHz,  $\text{DMSO-}d_6$ ) of AH260 hardener (based on triethylenetetramine (TETA)) in blue,  $\text{HO}_2\text{CC}_1\text{MImCl}$  in green and  $\text{HO}_2\text{CC}_1\text{MImCl}$  + TETA in red, where “a” represents the most acidic hydrogen of the imidazolium ring ( $\text{C}_2\text{-H}$ ).

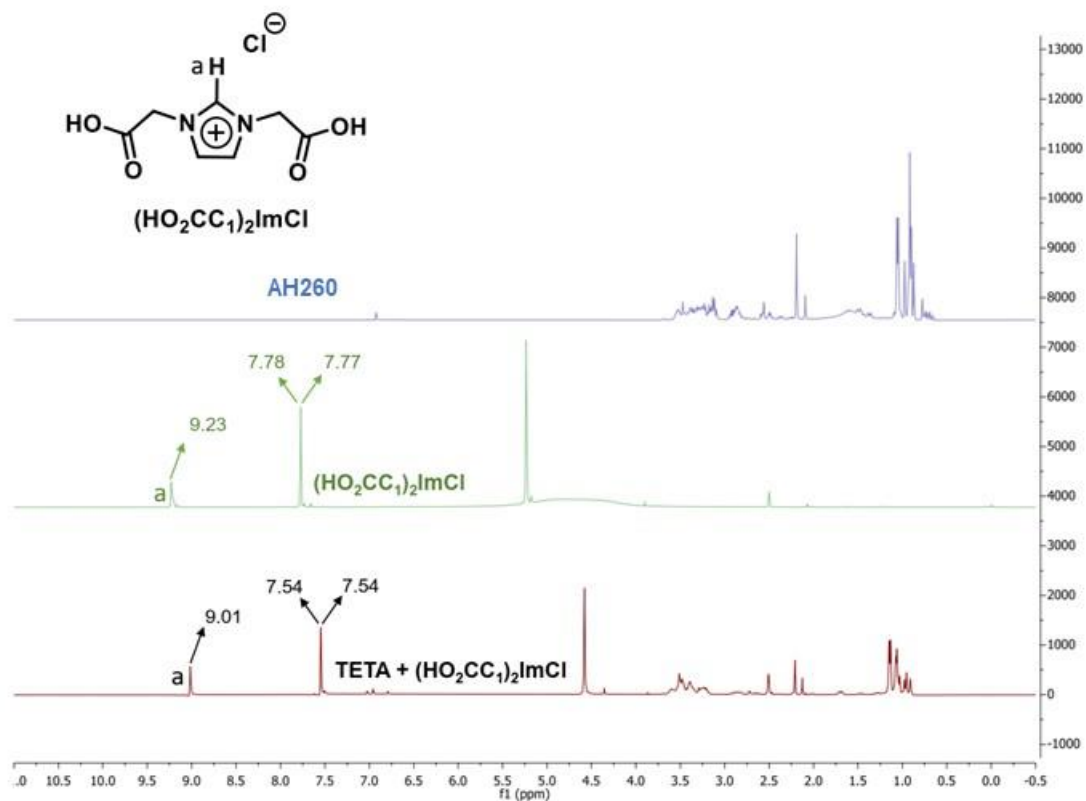


Figure S4:  $^1\text{H}$  NMR spectra (400 MHz,  $\text{DMSO-}d_6$ ) of AH260 hardener (based on triethylenetetramine (TETA)) in blue,  $(\text{HO}_2\text{CC}_1)_2\text{MImCl}$  in green and  $(\text{HO}_2\text{CC}_1)_2\text{MImCl}$  + TETA in red, where “a” represents the most acidic hydrogen of the imidazolium ring ( $\text{C}_2\text{-H}$ ).

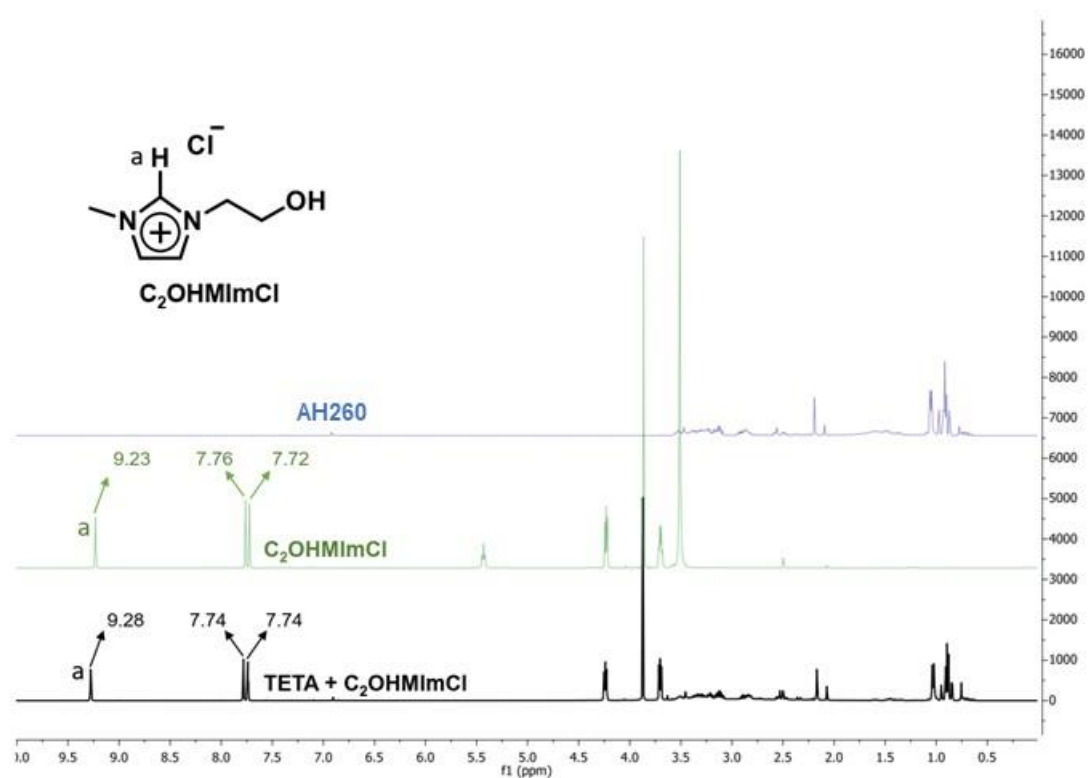


Figure S5:  $^1H$  NMR spectra (400 MHz,  $DMSO-d_6$ ) of AH260 hardener (based on triethylenetetramine (TETA)) in blue,  $C_2HOMImCl$  in green and  $C_2HOMImCl$  + TETA in black, where “a” represents the most acidic hydrogen of the imidazolium ring ( $C_2-H$ ).

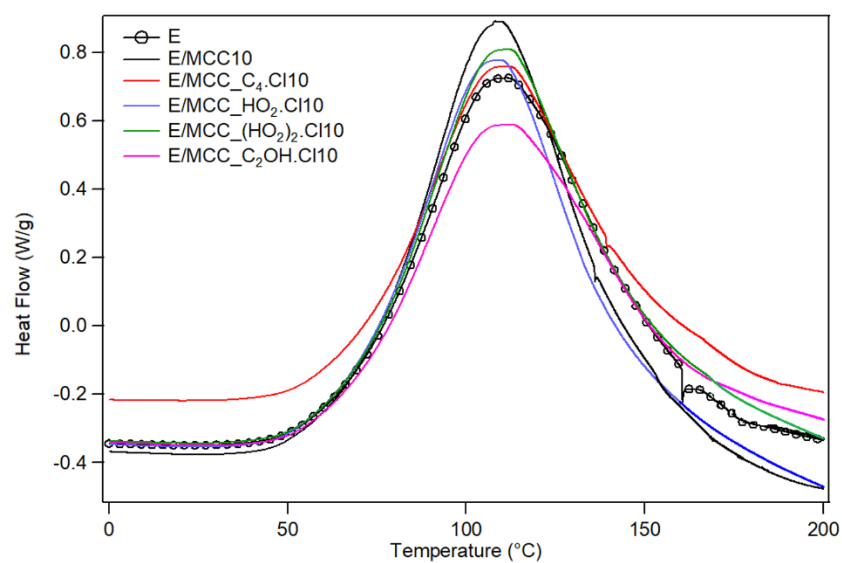


Figure S6: DSC curves for epoxy and the 10 phr MCC/epoxy composites.

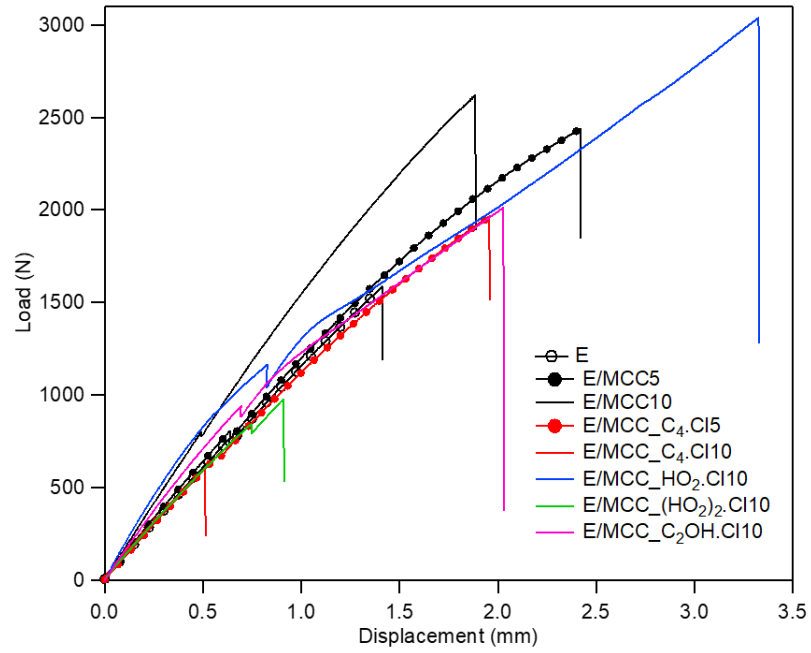


Figure S7: Median curves from tensile tests for epoxy and the MCC/epoxy composites.

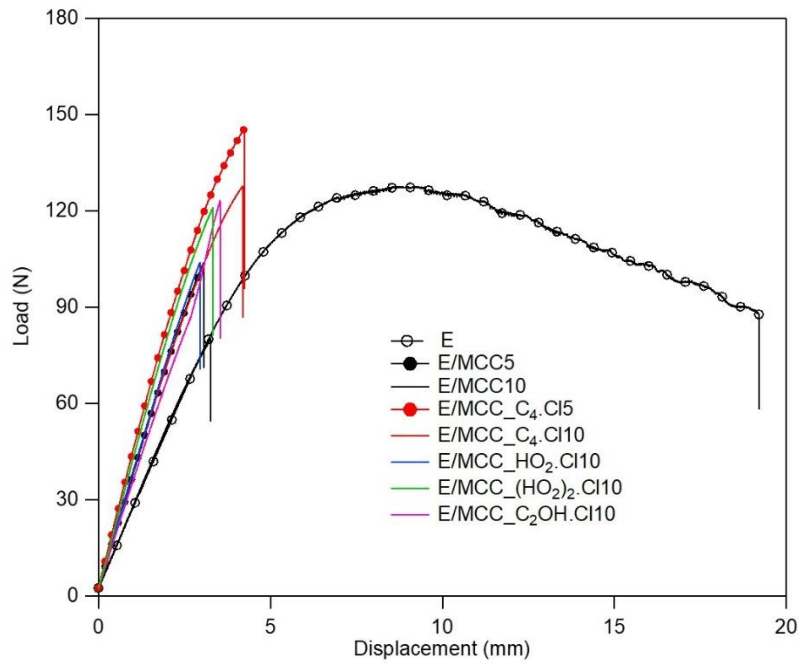


Figure S8: Median curves from 3-point bending tests for epoxy and the MCC/epoxy composites.