Study of the performance of imidazolium-derived cations as structure directing agents in the synthesis of zeolites in fluoride media

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Electronic Supplementary Information.

1. Multinuclear MAS NMR details.

All the spectra were acquired at room temperature in an Agilent Technologies 500MHz DD2, using 4mm ZrO_2 rotors. The ^{29}Si spectra were acquired at a resonance frequency of 99.3 MHz with a 2.8 μs pulse at 62dB, 5s relaxation delay at 10kHz. The ^{13}C spectra of the as-made zeolites were acquired at 125.7 MHz resonance frequency using a CP-MAS sequence, with a 2.7μs pulse at 62dB, 7.0 ms contact time, 20s relaxation delay at 10kHz.

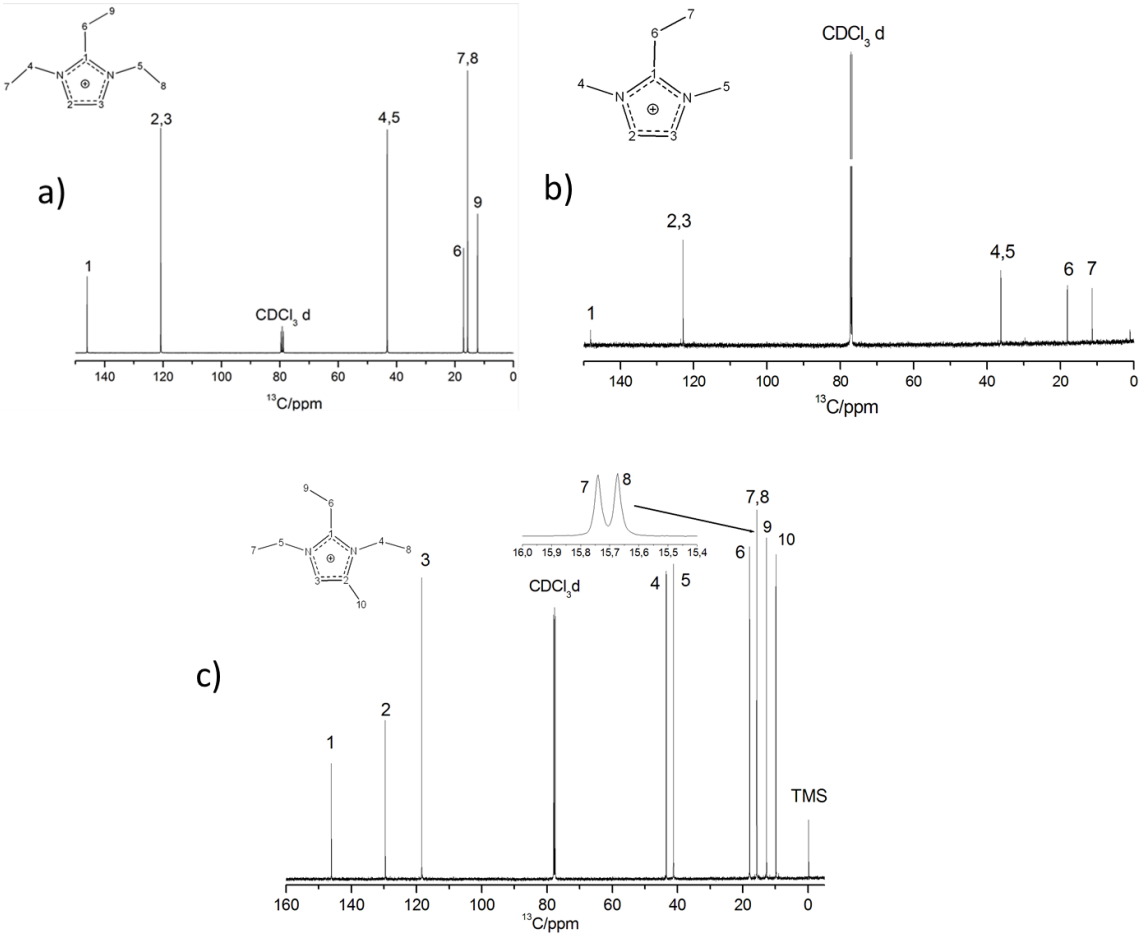

Figure S1. ^{13}C NMR of the different SDAs: a) 1,2,3-triethylimidazolium (123TEI), b) 2-ethyl-1,3-dimethylimidazolium (2E13DMI), c) 1,2,3-triethyl-4-methylimidazolium (123TE4MI).

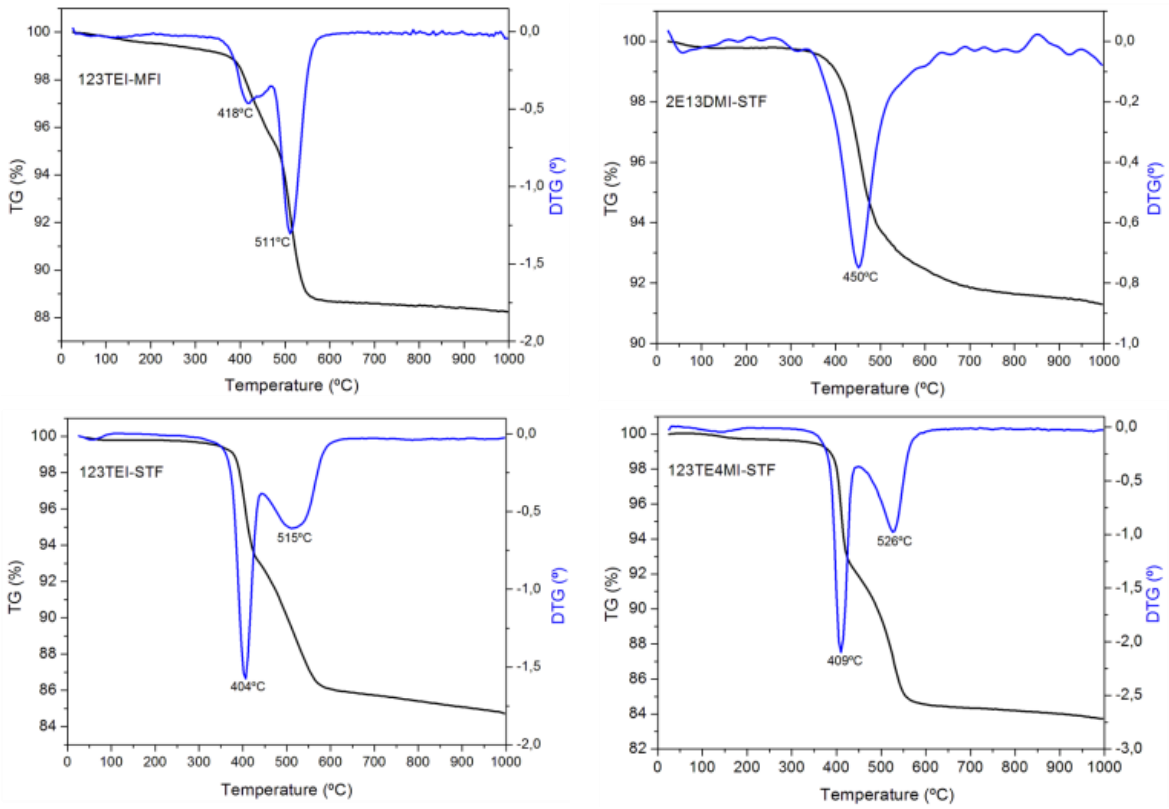

Figure S2. Thermogravimetric (TG) and differential thermal gravimetric (DTG) analyses of the different materials.

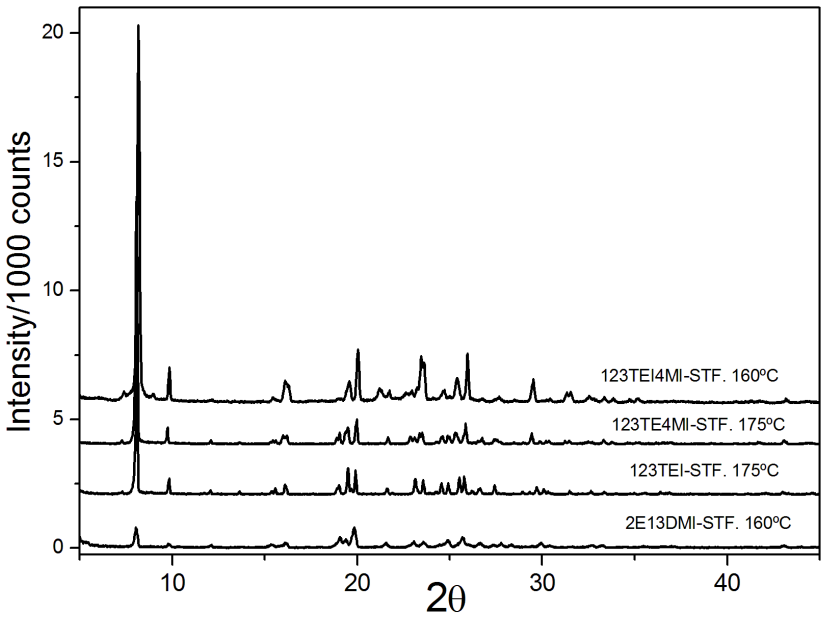

Figura S3. Powder X-Ray Diffraction patterns of the STF zeolite obtained with the different SDAs, 123TEI, 123TE4MI, 2E13DMI.

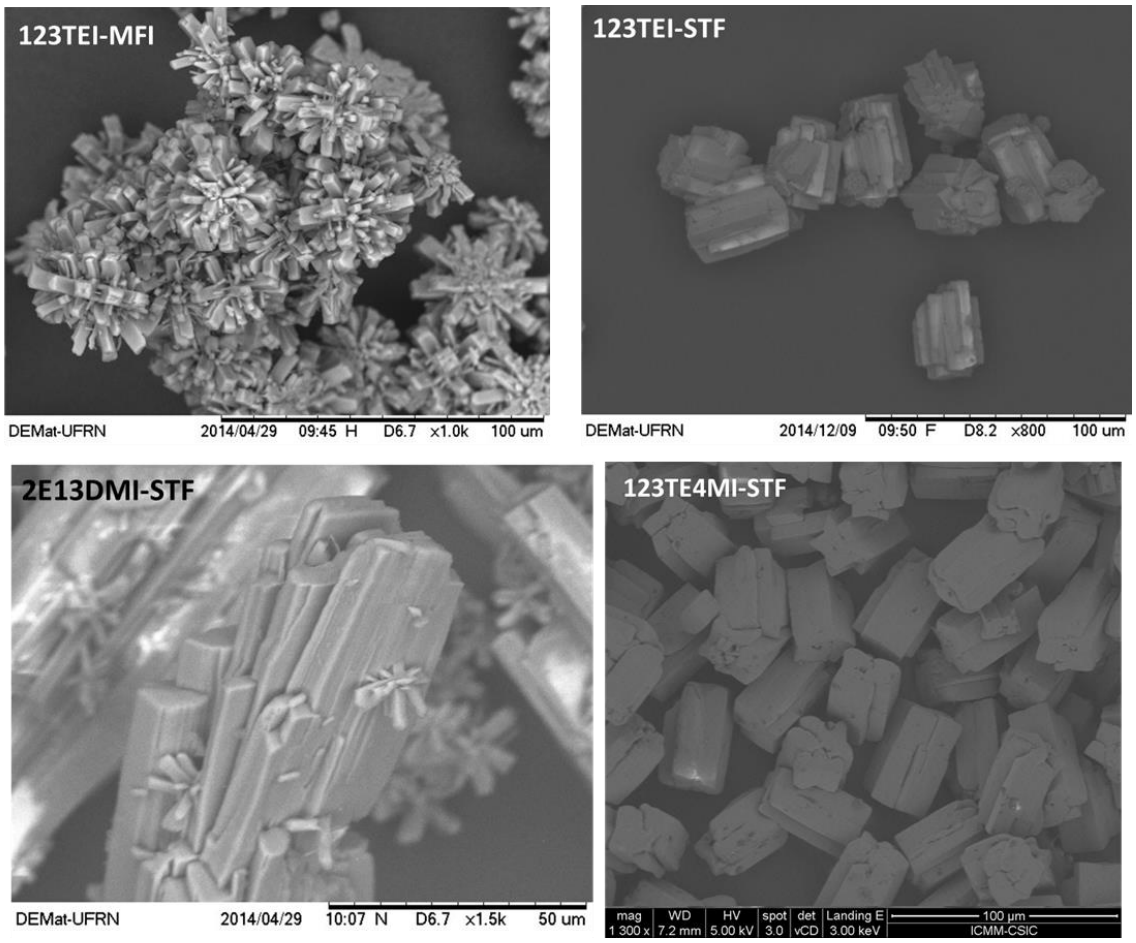

Figure S4. FE-SEM pictures of different materials obtained.

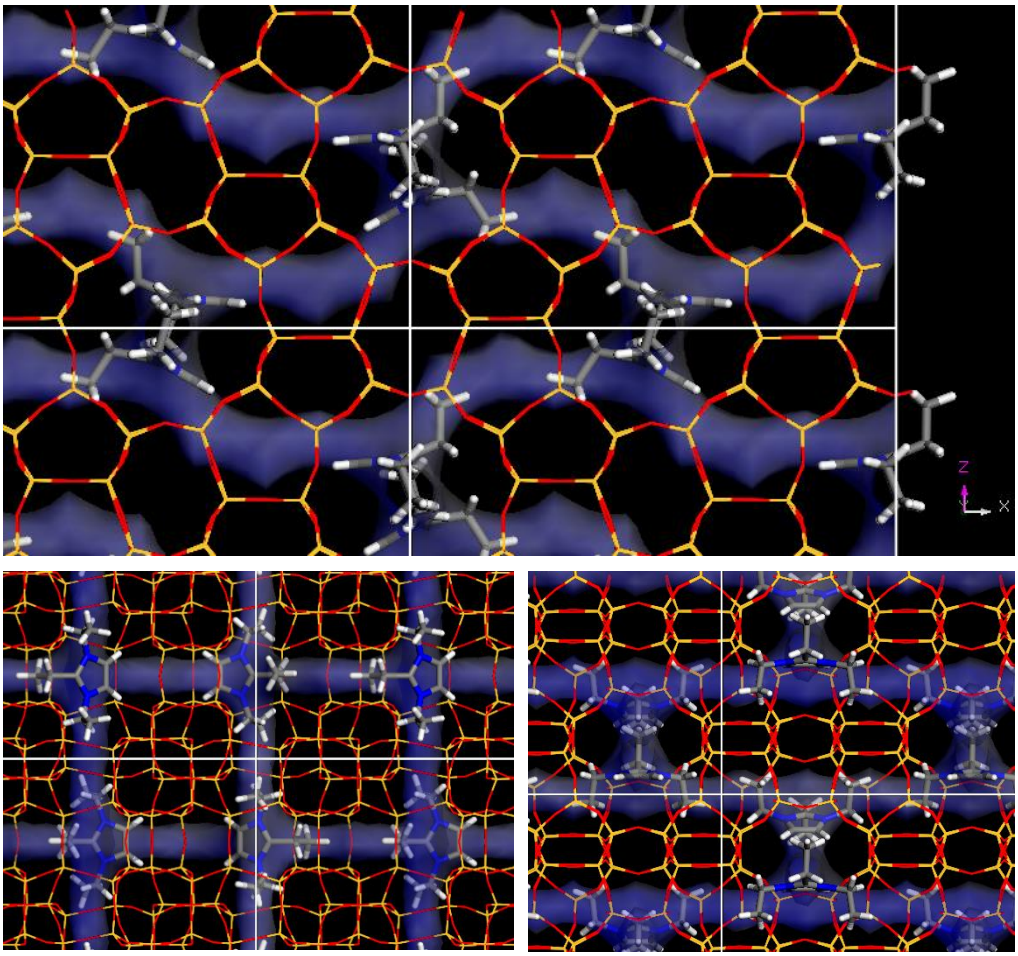

Figure S5. Location of TEI molecules (with central ethyl groups pointing towards the same sinusoidal channels alternatively, configuration 2 in Table 1) within the MFI framework (with 4 molecules per unit cell).

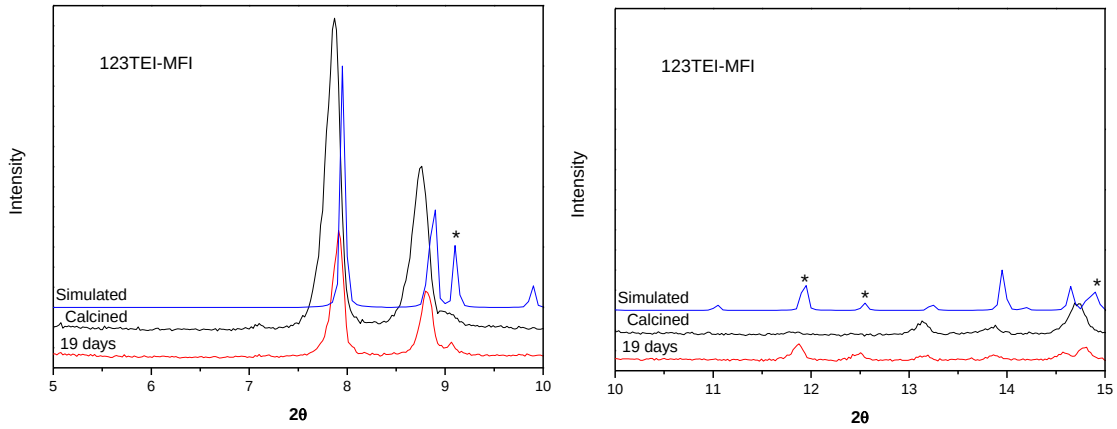

Figure S6. XRD patterns of the as-made (19 days, red line) and calcined (black line) 123TEI-MFI samples, and simulated pattern of the molecular model (blue line). Diffractions present only in the organic-containing material are indicated by asterisks.