Parameters synthesis of Na-magadiite materials for water treatment: removal of basic blue-41. Properties and single batch design adsorber

Abdulaziz M. Alanazi,[1]* Hmoud Al Dmour,[2] Saheed A Popoola,[1] Hicham Oudghiri Hassani,[3] Souad Rakass,[4] Rawan Al-Faze,[5] Fethi Kooli[1*]

The equilibrium removal capacity (q_e, mg/g) of Na-magadiite samples for basic Blue-41 was computed by the Eq. S1.

$$q_e = \frac{(C_o - C_e)V}{m} \qquad \text{(S1)}$$

The removal percentage (R %) of Na-magadiite samples for basic Blue-41 was computed by the Eq. S2.

$$R\% = \frac{(C_o - C_e)x100}{C_o} \qquad \text{(S2)}$$

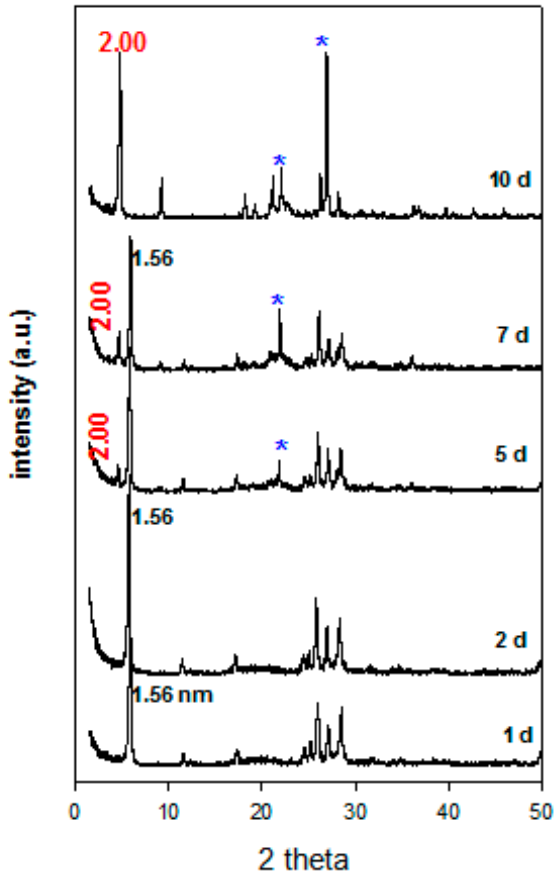

Figure S1. PXRD patterns of samples prepared from colloidal silica for different periods of times at 150 ºC. * corresponds to crystalline quartz phase.

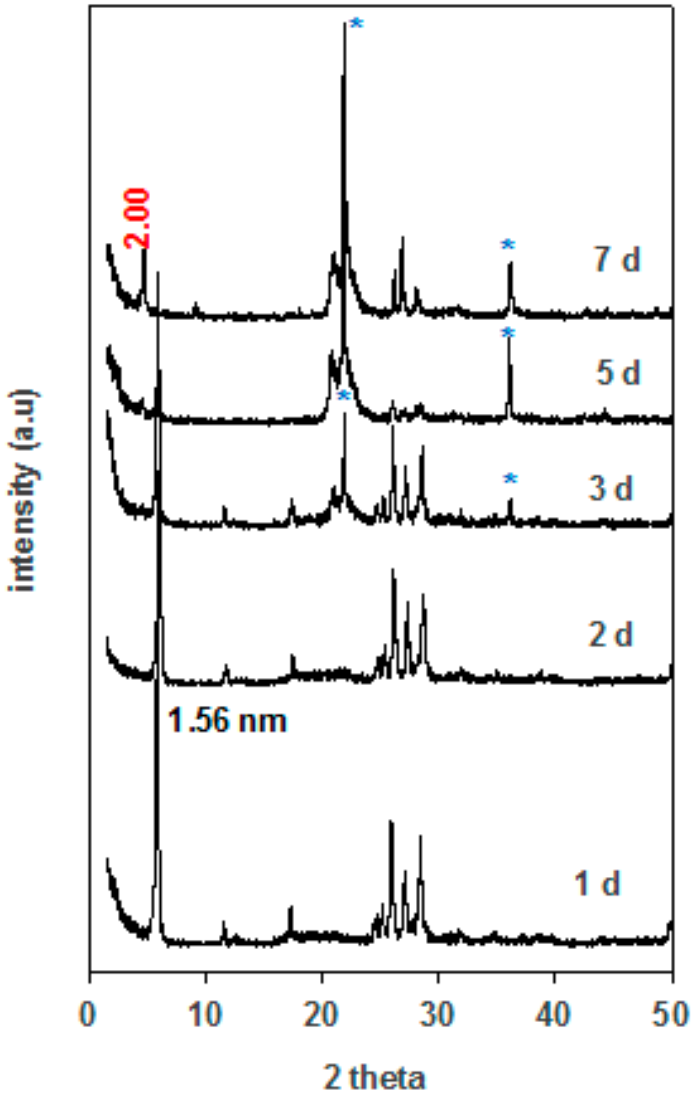

Figure S2. PXRD patterns of samples prepared from Ludox-HS40 for different periods of times at 150 ºC. * corresponds to crystalline silica phase.

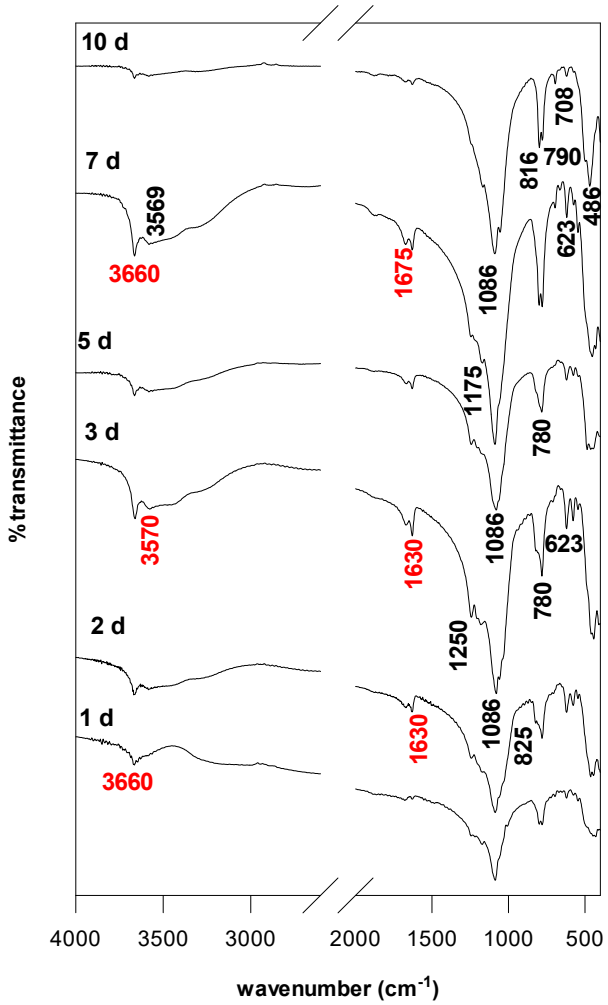

Figure S3. FTIR spectra of samples prepared from fumed silica at 150 ºC for different periods of times

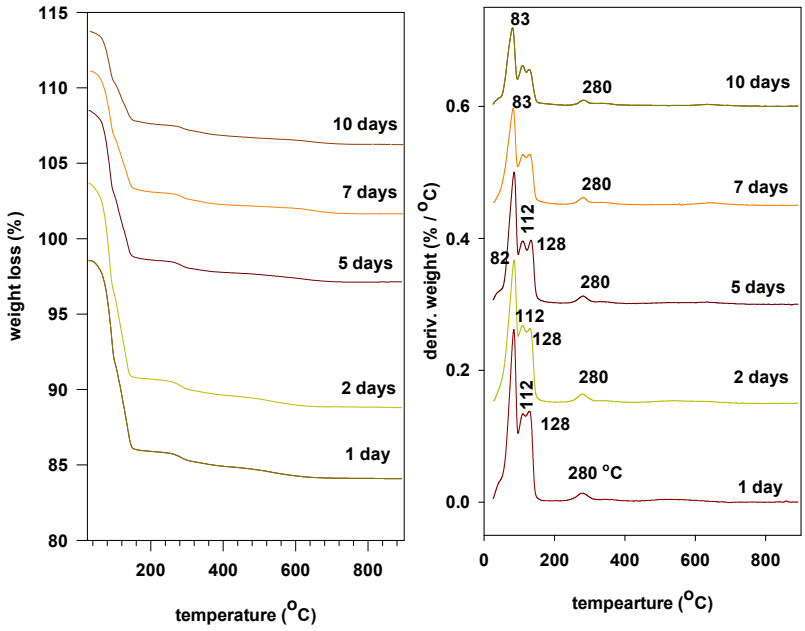

Figure S4. TGA (left) and DTG (right) features of products prepared from fumed silica at different periods of time and at 150 °C.

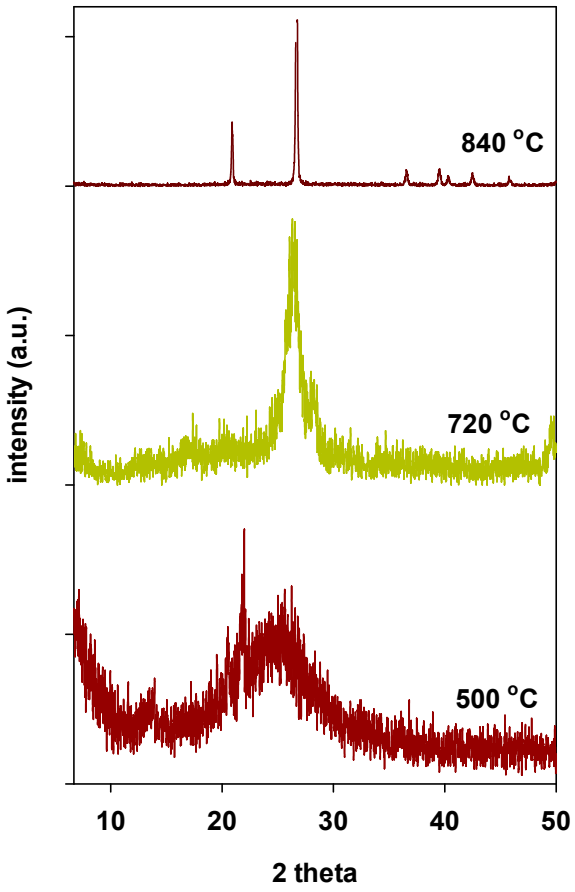

Figure S5. PXRD patterns of MAG-FS calcined at different temperatures. The sharp reflection at 840 ºC corresponds to quartz phase.

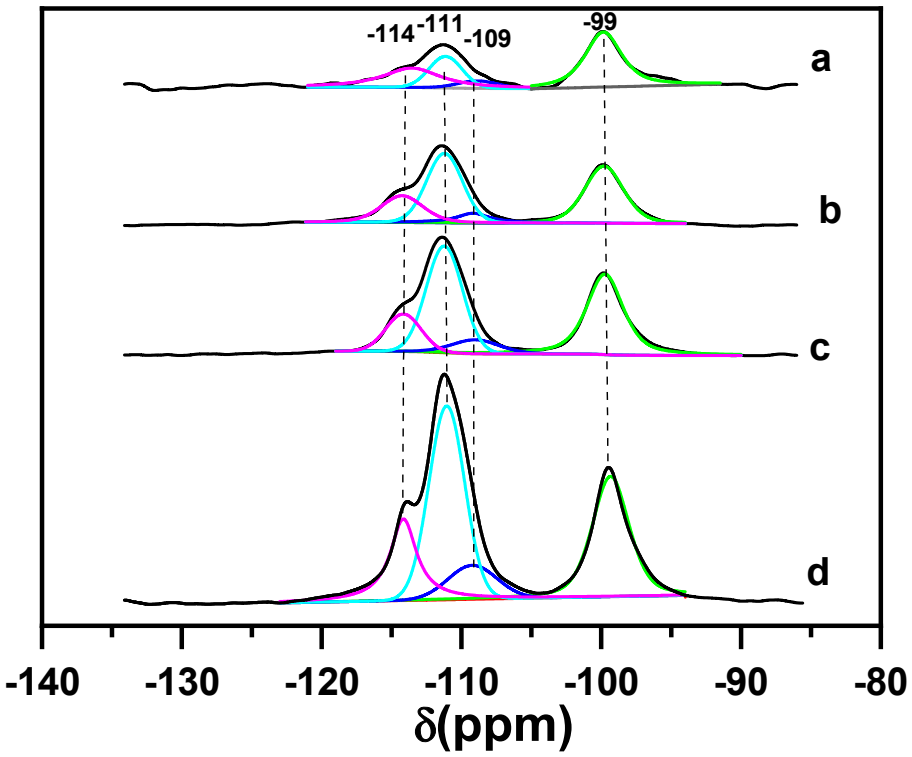

Figure S6. Deconvolution of resonnance peaks of Na-magadiites prepared from different silica sources. (a) MAG-HS, (b) MAG-AS, (c) MAG-CS, and (d) MAG-FS.

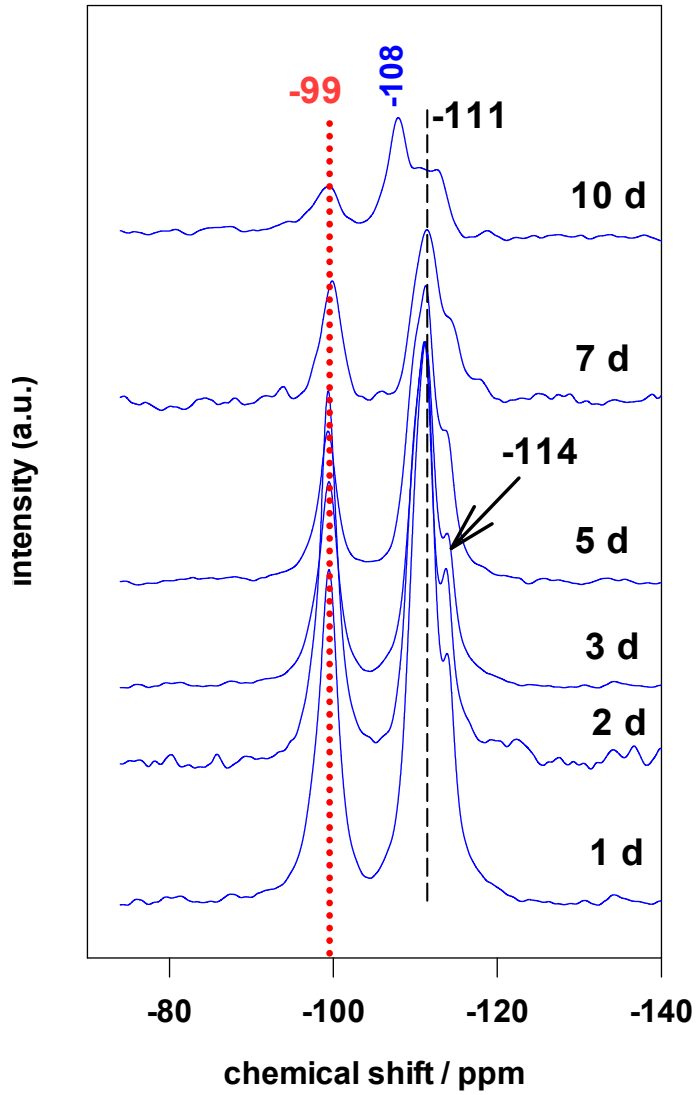

Figure S7. ^{29}Si MAS NMR spectra of materials prepared from colloidal silica at 150 ºC for differen periods of time, d= day (s)

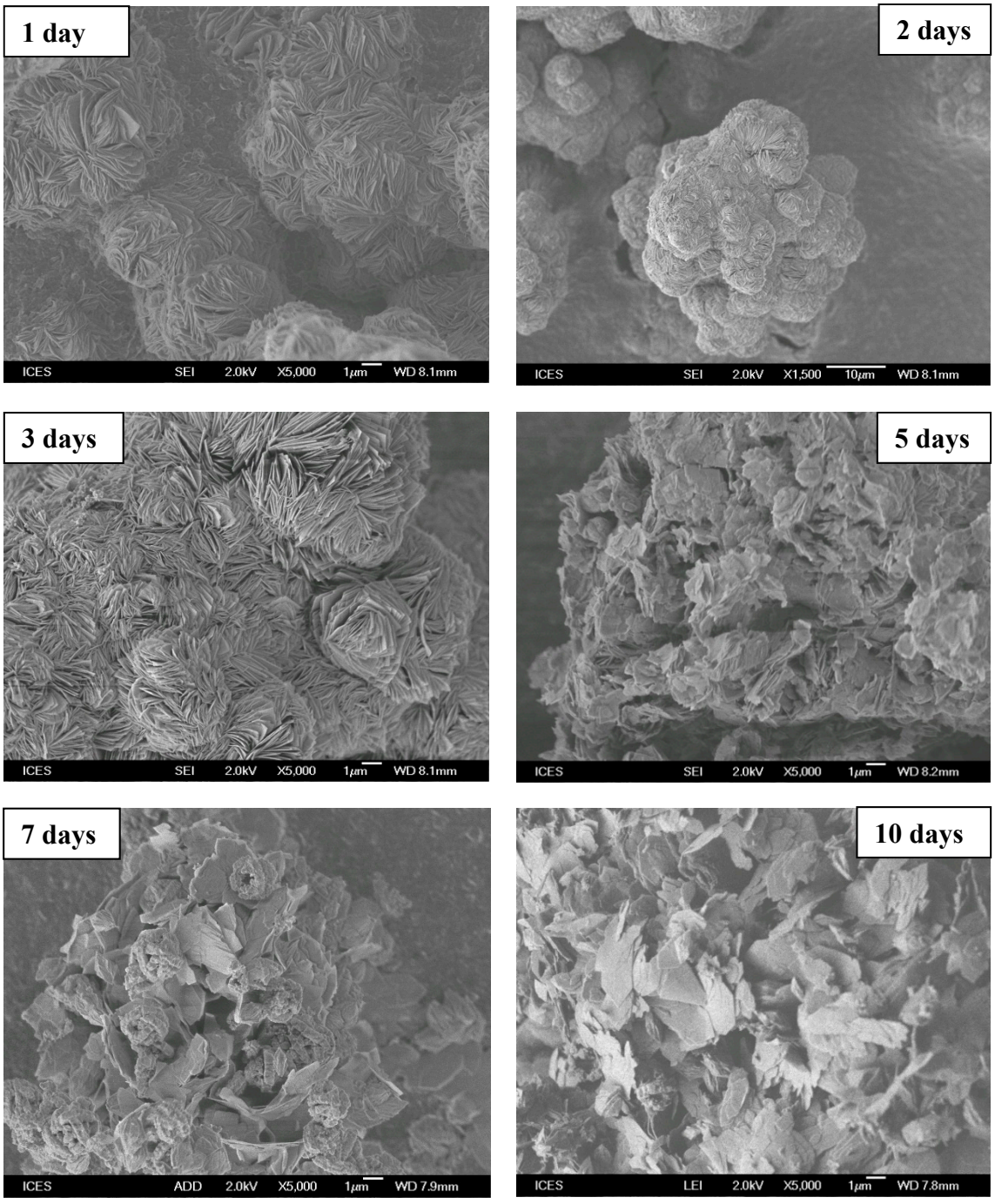

Figure S8. SEM micrographs of materials prepared from Ludox-AS40% for different period of times at 150 ºC.