

Supplementary Materials

^{13}C , ^{27}Al and ^{29}Si NMR Investigation of the Hydration Kinetics of Portland-Limestone Cement Pastes Containing $\text{CH}_3\text{-COO}^-\text{-R}^+$ ($\text{R}=\text{H}$ or Na) Additives

Anton Mazur ^{1,*}, Peter Tolstoy ¹ and Konstantinos Sotiriadis ^{2,3}

¹ Saint Petersburg State University, Universitetsky pr. 26, 198504 Saint Petersburg, Russia; peter.tolstoy@spbu.ru

² Institute of Theoretical and Applied Mechanics of the Czech Academy of Sciences, Prosecka 809/76, 19000 Prague, Czech Republic; sotiriadis@itam.cas.cz

³ Department of Building Materials and Products, South Ural State University (National Research University), pr. Lenina 76, 454080 Chelyabinsk, Russia

* Correspondence: a.mazur@spbu.ru

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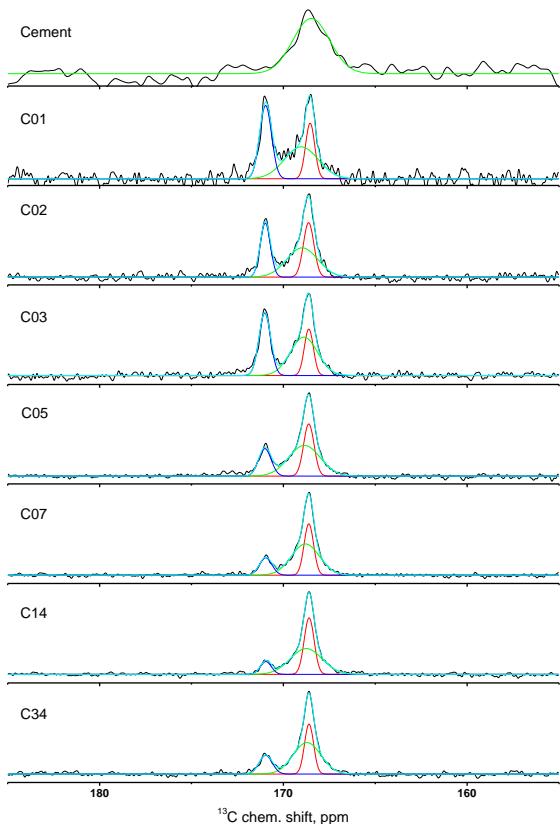
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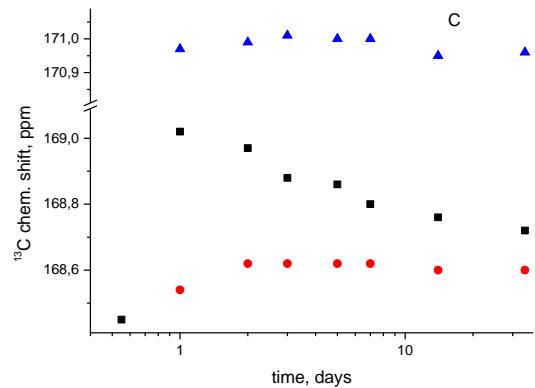
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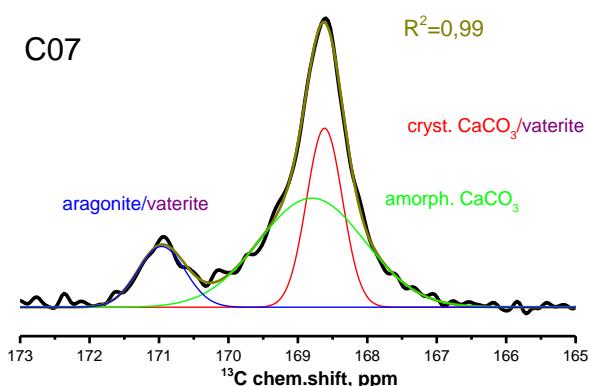
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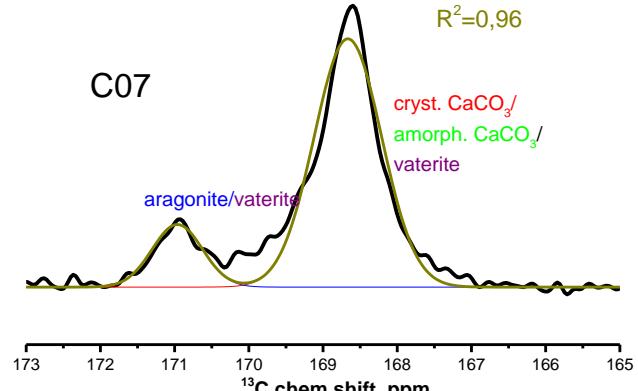
(a)



(b)

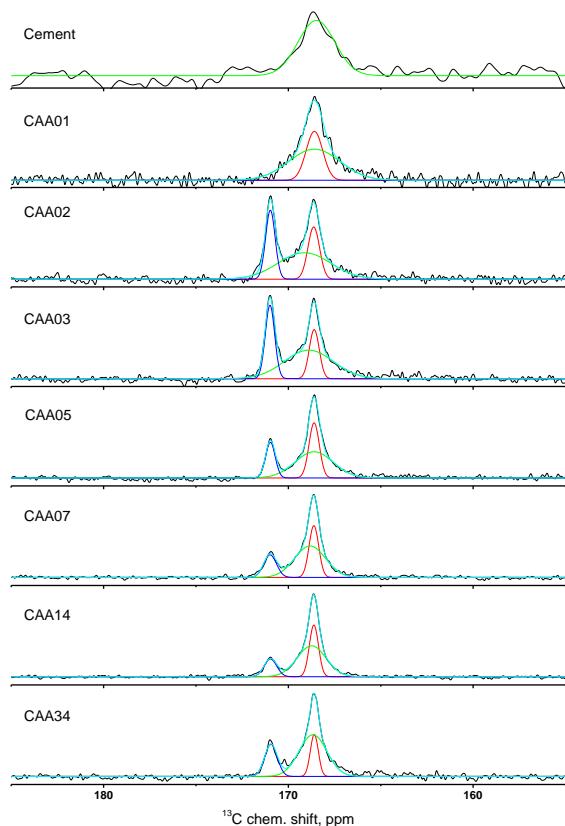


(c)

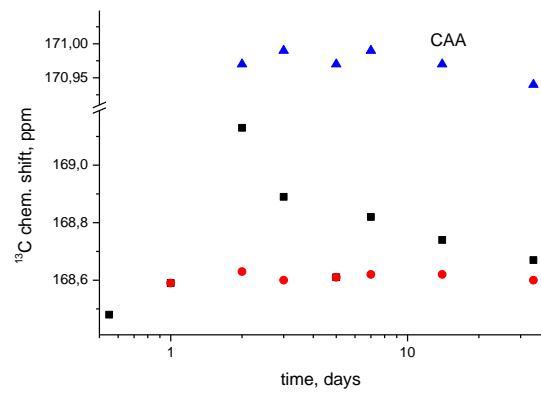


(d)

Figure S1. ^{13}C NMR spectra of the anhydrated Portland-limestone cement and cement paste samples without additives (C) (a) and the chemical shift of spectra components (b) at the different hydration time. Deconvolution of C07 spectra per three (c) and two (d) components.

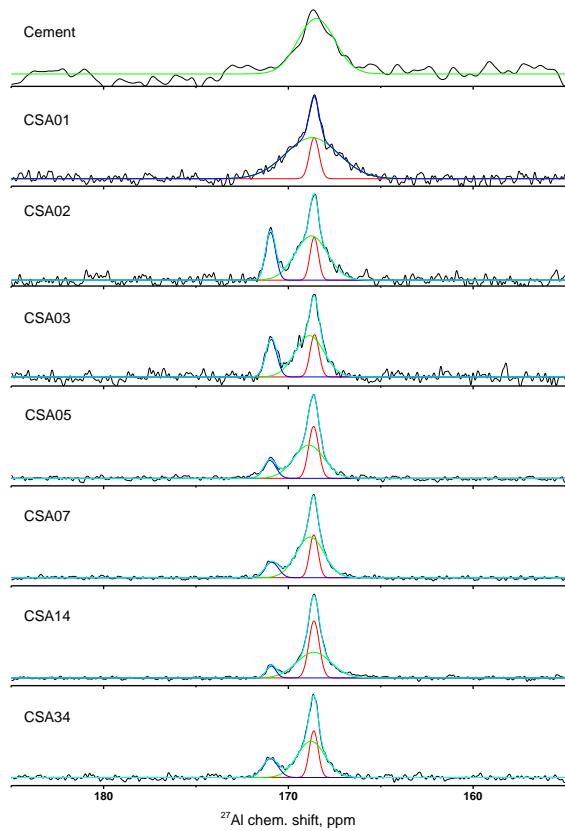


(a)

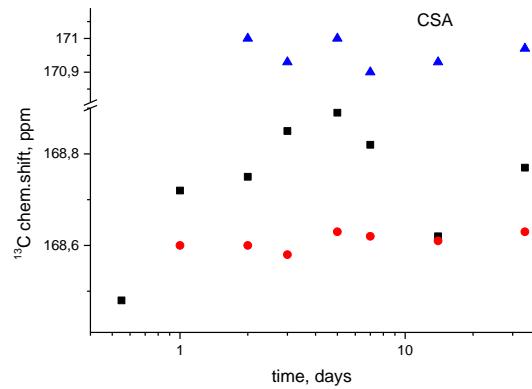


(b)

Figure S2. ^{13}C NMR spectra of the anhydrous Portland-limestone cement and cement paste samples with Acetic Acid (CAA) (a) and the chemical shift of spectra components (b) at the different hydration time.

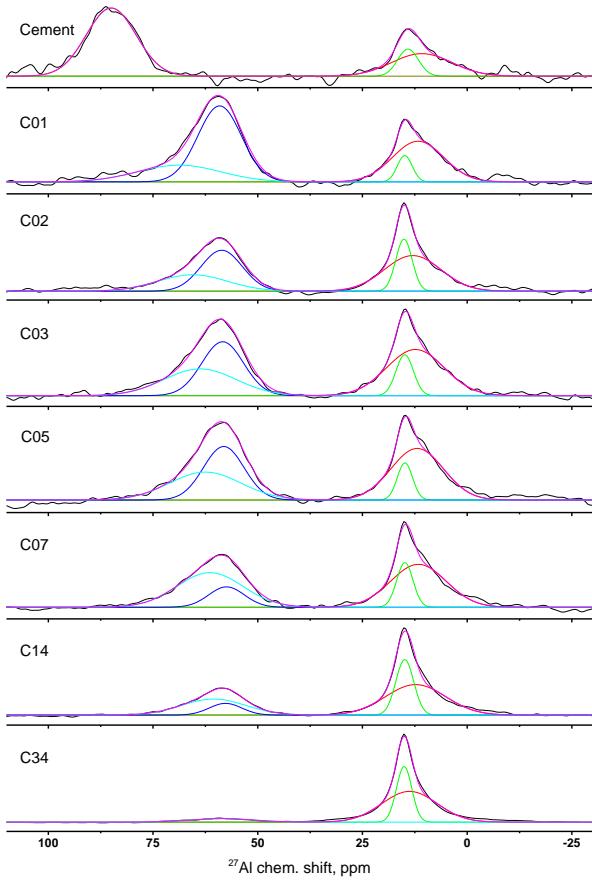


(a)

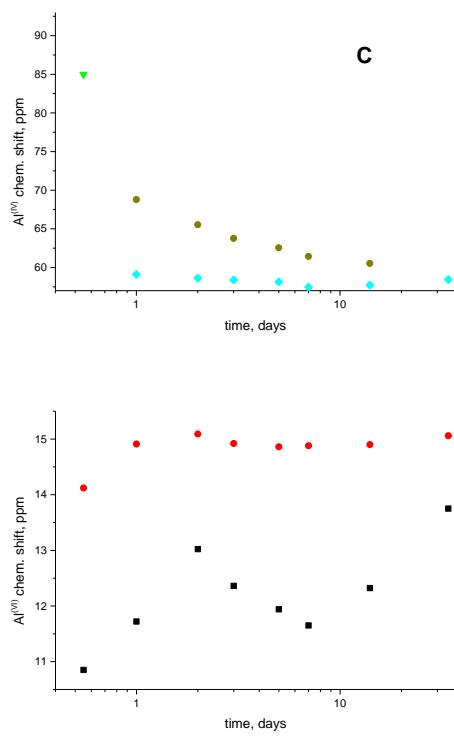


(b)

Figure S3. ^{13}C NMR spectra of the anhydrated Portland-limestone cement and cement paste samples with Sodium Acetate (CSA) (a) and the chemical shift of spectra components (b) at the different hydration time.

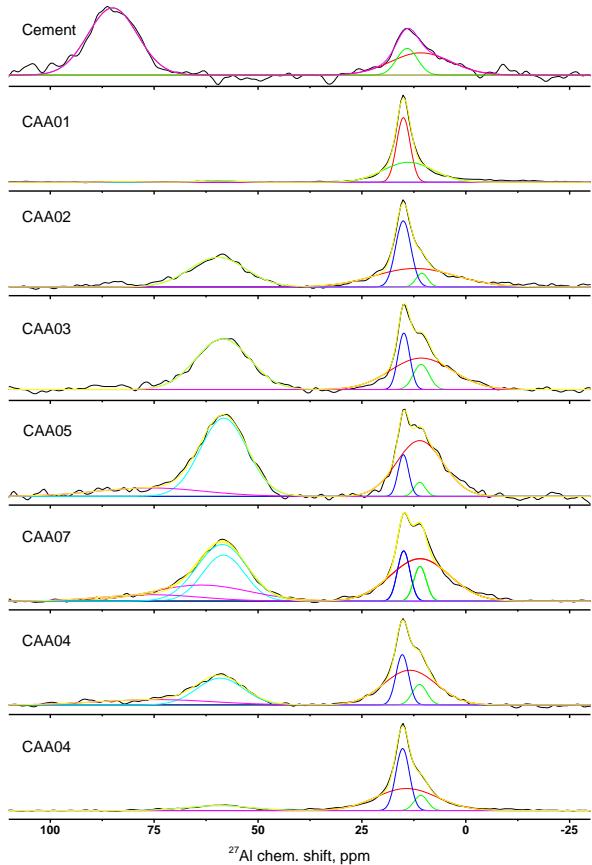


(a)

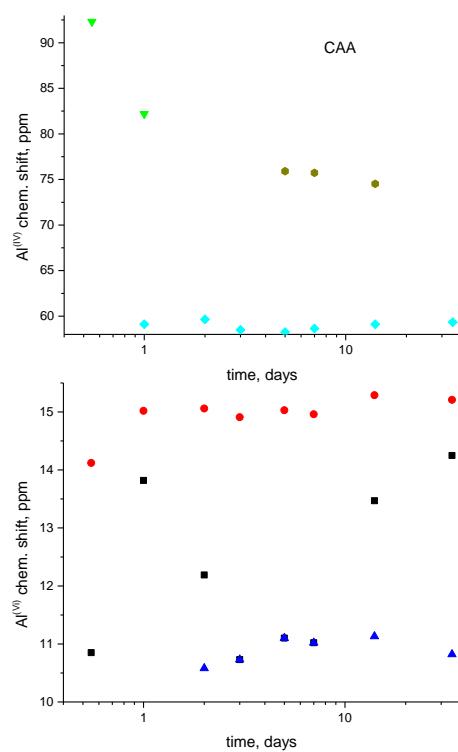


(b)

Figure S4. ^{27}Al NMR spectra of the anhydrated Portland-limestone cement and cement paste sample without additives (C) (a) and the chemical shift of spectra components (b) at the different hydration time.

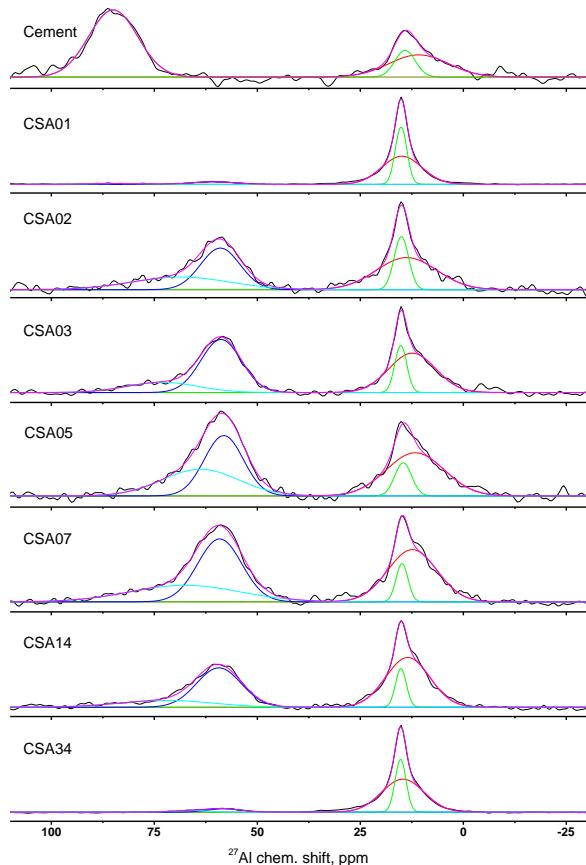


(a)

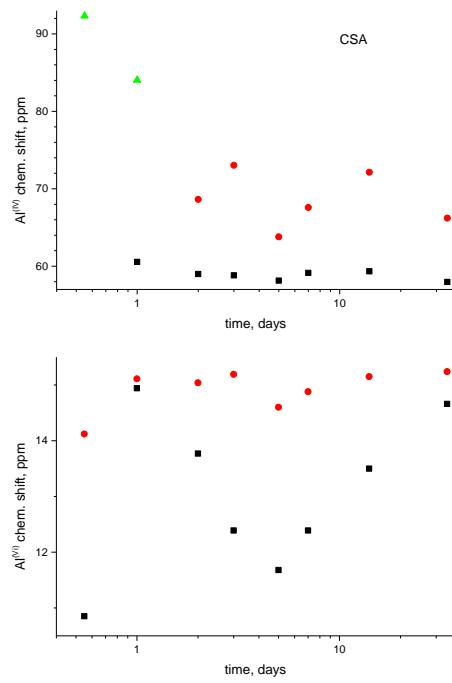


(b)

Figure S5. ^{27}Al NMR spectra of the anhydrated Portland-limestone cement and cement paste samples with Acetic Acid (CAA) (a) and the chemical shift of spectra components (b) at the different hydration time.



(a)



(b)

Figure S6. ^{27}Al NMR spectra of the anhydrated Portland-limestone cement and cement paste samples with Sodium Acetate (CSA) (a) and the chemical shift of spectra components (b) at the different hydration time.

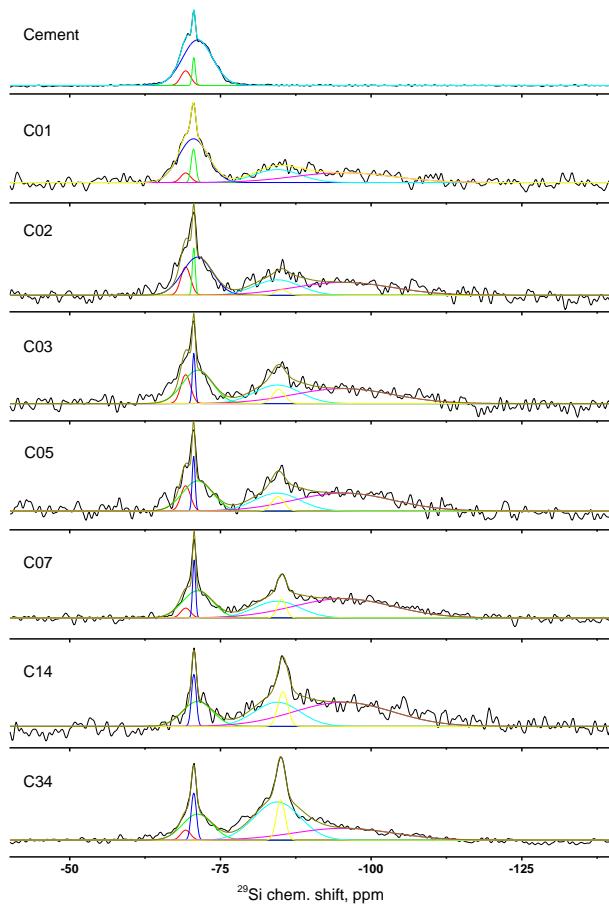


Figure S7. ^{29}Si NMR spectra of the anhydrated Portland-limestone cement and cement paste sample without additives (C).

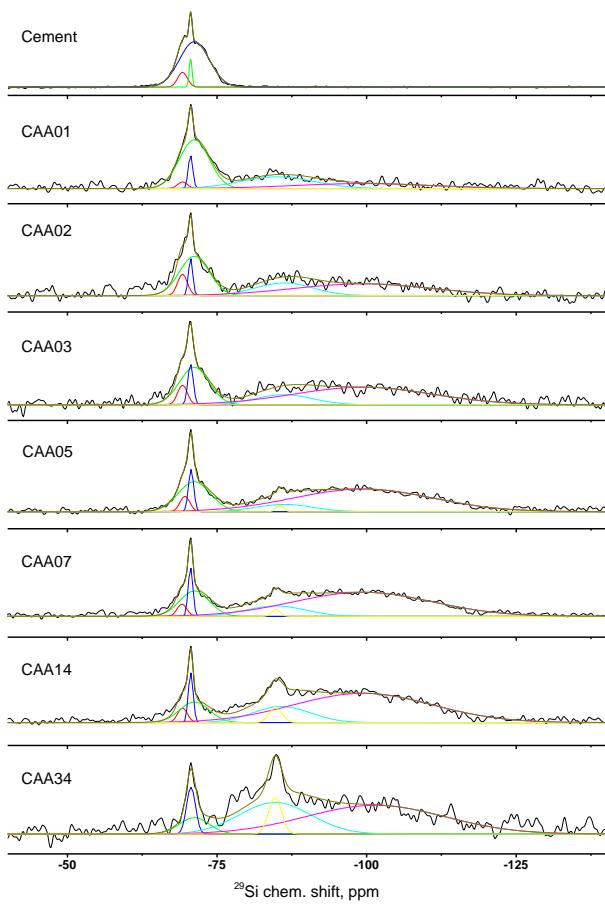


Figure S8. ^{29}Si NMR spectra of the anhydrated Portland-limestone cement and cement paste samples with Acetic Acid (CAA).

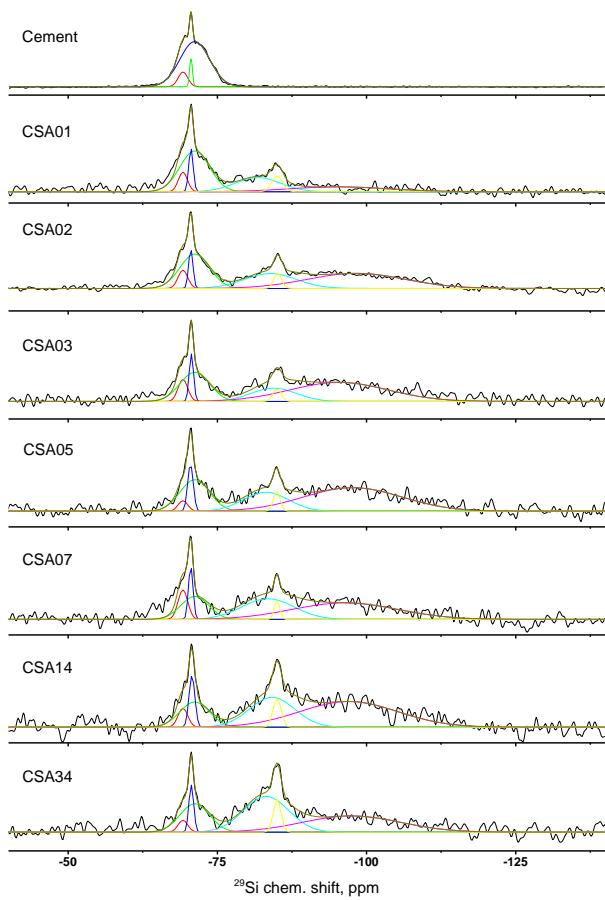


Figure S9. ^{29}Si NMR spectra of the anhydrated Portland-limestone cement and cement paste samples with Sodium Acetate (CSA).