

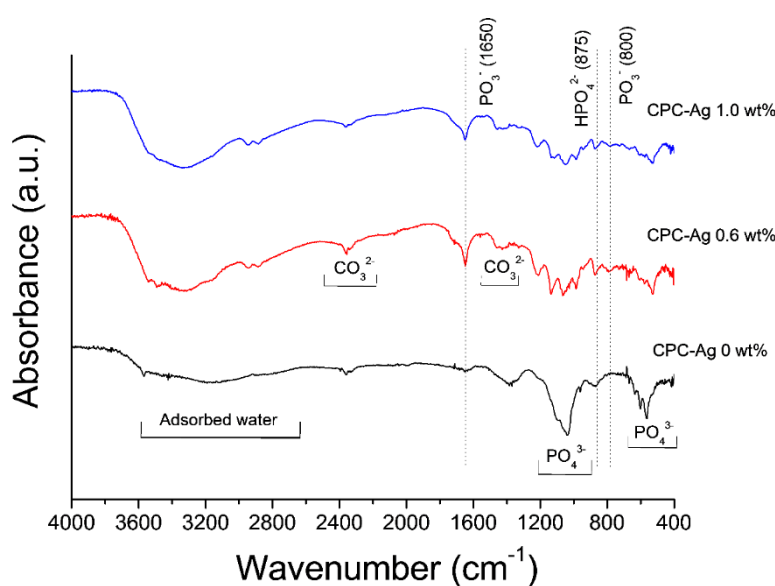
## Supplementary Materials

### FTIR Measurement

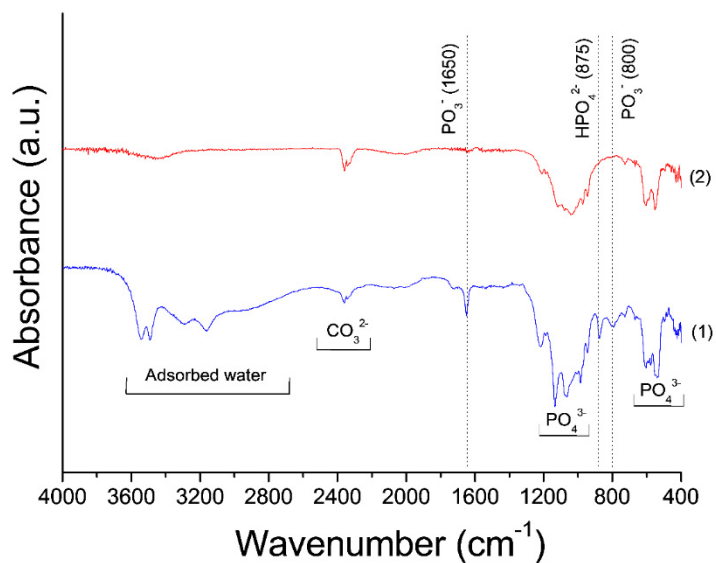
We have performed FTIR measurement (Nicolet Avatar 330 FTIR spectrometer, England) before and after silver-ion release from cement samples into the TRIS-HCl buffer solution. The cement samples were mixed in a ratio of 1 mg of sample with 300 mg of KBr powder followed by compacting those into a thin pellet in a stainless steel die with 1 cm inner diameter. FTIR data were recorded over the range of 4000 to 400  $\text{cm}^{-1}$  with 128 scans.

FTIR spectra of CPC-Ag 0 wt %, CPC-Ag 0.6 wt % and CPC-Ag 1.0 wt % cement samples after 24 h of hardening process are presented on Figure S1. For all investigated cement systems, adsorbed water band was relatively wide, from about 3600 to 2600  $\text{cm}^{-1}$ , with an explicit peak at 3570  $\text{cm}^{-1}$ .  $\text{CO}_3^{2-}$  group exhibited weak peak at 2359  $\text{cm}^{-1}$  and in the range between 1460 and 1530  $\text{cm}^{-1}$ .  $\text{PO}_4^{3-}$  group vibration bands were observed in the range between 1000 and 1156  $\text{cm}^{-1}$ , at 964  $\text{cm}^{-1}$ , at 553–610  $\text{cm}^{-1}$ , and at 470  $\text{cm}^{-1}$ , which is characteristic of  $\beta$ -TCP [s1]. For both CPC-Ag 0.6 wt % and CPC-Ag 1.0 wt % cement samples,  $\text{HPO}_4^{2-}$  group was detected at 875  $\text{cm}^{-1}$  that confirms the appearance of the new DCPD phase. Furthermore, the peaks at  $\sim 800$  and 1650  $\text{cm}^{-1}$ , easily visible for the cement samples, were attributed to the bond vibration of  $\text{PO}_3^-$  [s2]. Therefore, it can be concluded that  $\text{CaAg}(\text{PO}_3)_3$  was present in both CPC-Ag 0.6 wt% and CPC-Ag 1.0 wt% cement samples.

FTIR spectra of the CPC-Ag 1.0 wt% after 3 and 14 days of silver-ion release test into the TRIS-HCl buffer solution are shown in Figure S2. No  $\text{CaAg}(\text{PO}_3)_3$  product was detected after 14 days, which is proven by the  $\text{PO}_3^-$  peaks, disappearing at  $\sim 800$  and 1650  $\text{cm}^{-1}$ .



**Figure S1.** FTIR spectra of CPC-Ag 0 wt %, CPC-Ag 0.6 wt % and CPC-Ag 1.0 wt % cement samples after 24 h of hardening process.



**Figure S2.** FTIR spectra of the CPC-Ag 1.0 wt % after 3 (1) and 14 (2) days of silver-ion release test into the TRIS-HCl buffer solution.

## References

- s1 Berzina-Cimdina, L.; Borodajenko, N. Research of calcium phosphates using fourier transform infrared spectroscopy, infrared spectroscopy. In *Materials Science, Engineering and Technology*; Theophile, T., Ed.; InTech: Rijeka, Croatia, 2012; pp. 123–148.
- s2 Bozetine, I.; Boukennous, Y.; Trari, M.; Moudir, N. Synthesis and characterization of orthophosphate silver powders. *Energy Procedia* **2013**, *36*, 1158–1167.



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