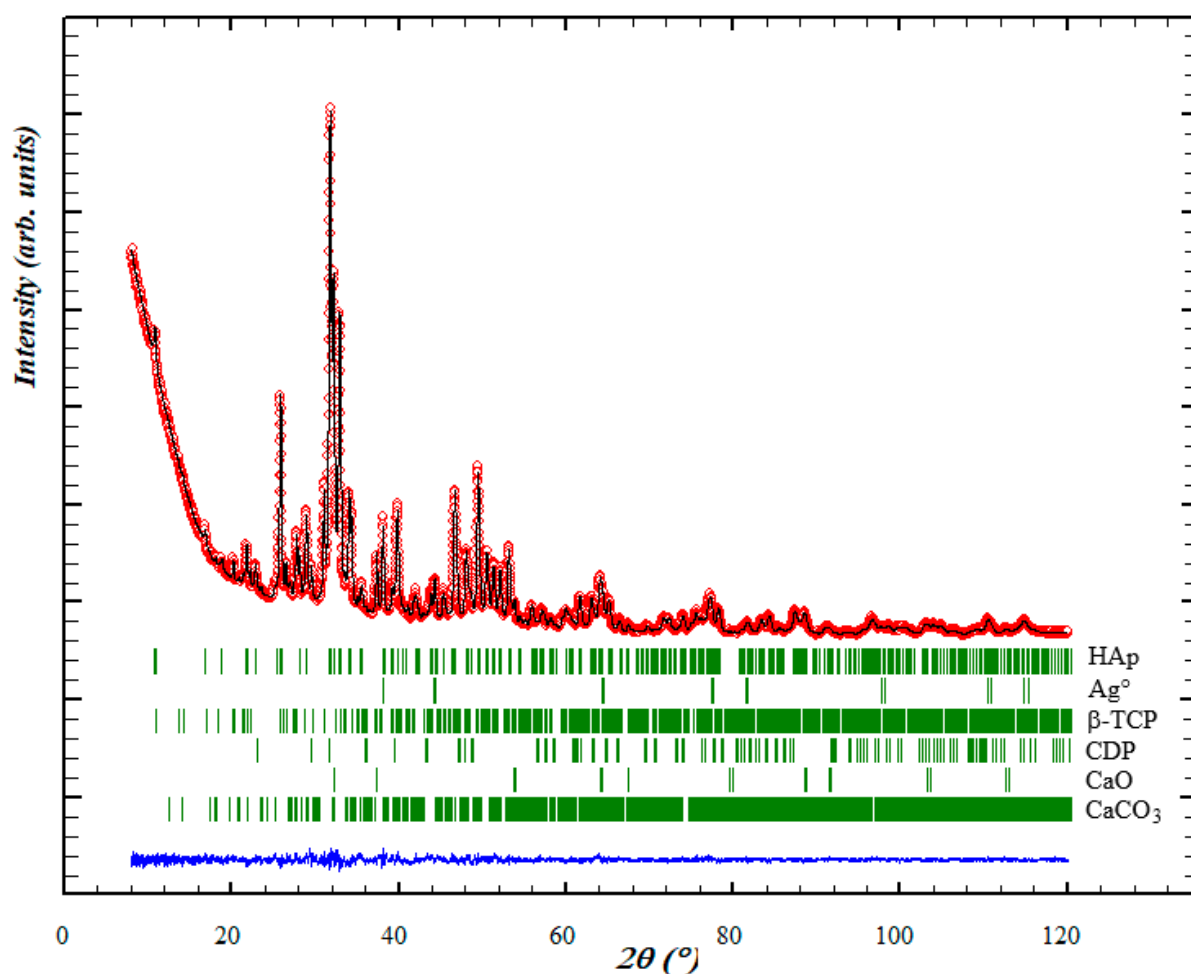




**Figure S1.** Rietveld plot (conventional Rietveld agreement factors:  $R_p = 0.048$ ,  $R_{wp} = 0.053$ ,  $\chi^2 = 2.26$ ) of the powder pattern of the 25Ag-600 sample with experimental data (red circles), simulated pattern (black line), difference curve (blue line) and Bragg peak position for the six phases present: HAp,  $Ag^\circ$ ,  $\beta$ -TCP, CDP, CaO and  $CaCO_3$ .

**Table S1.** HAp structural parameters refined by Rietveld analyses on the 27 samples; standard deviations are indicated in brackets.

| Samples  | HAp Structural Parameters |             |                       |          |                                                      |         |
|----------|---------------------------|-------------|-----------------------|----------|------------------------------------------------------|---------|
|          | $a$ (Å)                   | $c$ (Å)     | $V$ (Å <sup>3</sup> ) | Ca sites | $B_{iso}$ (Å <sup>2</sup> )<br>PO <sub>4</sub> sites | OH site |
| 0Ag-400  | 9.4323 (2)                | 6.8837 (1)  | 530.38 (2)            | 0.94 (2) | 1.13 (3)                                             | 1.7 (3) |
| 0Ag-500  | 9.4209 (3)                | 6.8798 (2)  | 528.80 (3)            | 0.68 (1) | 0.83 (2)                                             | 1.0 (2) |
| 0Ag-600  | 9.4179 (2)                | 6.8813 (2)  | 528.57 (2)            | 0.84 (1) | 0.93 (2)                                             | 1.2 (1) |
| 0Ag-700  | 9.4172 (2)                | 6.8821 (1)  | 528.56 (2)            | 0.80 (1) | 0.89 (2)                                             | 0.7 (1) |
| 0Ag-800  | 9.4162 (1)                | 6.8793 (1)  | 528.24 (1)            | 0.61 (1) | 0.76 (2)                                             | 0.3 (2) |
| 0Ag-900  | 9.41904 (9)               | 6.87988 (9) | 528.597 (9)           | 0.71 (2) | 0.74 (2)                                             | 0.2 (2) |
| 0Ag-1000 | 9.42049 (9)               | 6.88113 (9) | 528.856 (9)           | 0.70 (1) | 0.64 (2)                                             | 0.2 (1) |
| 0Ag-1100 | 9.42016 (9)               | 6.88137 (6) | 528.838 (6)           | 0.59 (1) | 0.57 (2)                                             | 0.1 (1) |
| 0Ag-1200 | 9.41905 (9)               | 6.88160 (6) | 528.731 (6)           | 0.55 (1) | 0.53 (2)                                             | 0.1 (1) |
| 25Ag-400 | 9.4582 (2)                | 6.8927 (2)  | 534.00 (2)            | 0.66 (2) | 1.55 (3)                                             | 2.7 (3) |
| 25Ag-500 | 9.4232 (4)                | 6.8849 (3)  | 529.45 (4)            | 0.71 (2) | 1.29 (3)                                             | 3.1 (3) |
| 25Ag-600 | 9.4184 (4)                | 6.8857 (3)  | 528.98 (4)            | 0.69 (2) | 1.27 (3)                                             | 1.8 (2) |
| 25Ag-700 | 9.4165 (3)                | 6.8844 (2)  | 528.66 (3)            | 0.67 (2) | 1.03 (3)                                             | 0.8 (2) |
| 25Ag-800 | 9.4182 (2)                | 6.8811 (1)  | 528.60 (2)            | 0.69 (1) | 0.79 (2)                                             | 0.2 (1) |
| 25Ag-900 | 9.4181 (1)                | 6.87969 (9) | 528.48 (1)            | 0.69 (2) | 0.70 (2)                                             | 0.2 (2) |

|            |             |             |             |          |          |         |
|------------|-------------|-------------|-------------|----------|----------|---------|
| 25Ag-1000  | 9.4198 (1)  | 6.88108 (9) | 528.77 (1)  | 0.62 (1) | 0.63 (2) | 0.1 (1) |
| 25Ag-1100  | 9.42079 (9) | 6.88204 (6) | 528.959 (9) | 0.49 (1) | 0.46 (2) | 0.2 (2) |
| 25Ag-1200  | 9.41985 (6) | 6.88219 (6) | 528.865 (6) | 0.53 (1) | 0.52 (2) | 0.2 (2) |
| 100Ag-400  | 9.4878 (3)  | 6.9019 (2)  | 538.06 (3)  | 0.96 (3) | 1.41 (6) | 3.2 (5) |
| 100Ag-500  | 9.4245 (3)  | 6.8847 (3)  | 529.58 (3)  | 0.59 (3) | 0.97 (4) | 2.6 (3) |
| 100Ag-600  | 9.4177 (2)  | 6.8850 (2)  | 528.84 (3)  | 0.61 (2) | 0.93 (3) | 1.6 (3) |
| 100Ag-700  | 9.4160 (2)  | 6.8828 (2)  | 528.49 (2)  | 0.51 (2) | 0.75 (4) | 0.4 (3) |
| 100Ag-800  | 9.4179 (1)  | 6.8808 (2)  | 528.54 (1)  | 0.56 (2) | 0.74 (3) | 0.2 (2) |
| 100Ag-900  | 9.4186 (1)  | 6.8796 (1)  | 528.53 (1)  | 0.74 (2) | 0.71 (3) | 0.2 (2) |
| 100Ag-1000 | 9.4196 (1)  | 6.8803 (1)  | 528.69 (1)  | 0.82 (2) | 0.68 (3) | 0.5 (3) |
| 100Ag-1100 | 9.41993 (7) | 6.88112 (6) | 528.792 (9) | 0.81 (2) | 0.68 (3) | 0.6 (2) |
| 100Ag-1200 | 9.42015 (6) | 6.88172 (6) | 528.862 (6) | 0.61 (2) | 0.51 (2) | 0.2 (2) |

**Table S2.** TCP lattice parameters refined by Rietveld analyses on the 27 samples; standard deviations are indicated in brackets.

| Samples    | TCP Lattice Parameters |              |                            | Phase identification |
|------------|------------------------|--------------|----------------------------|----------------------|
|            | <i>a</i> (Å)           | <i>c</i> (Å) | <i>V</i> (Å <sup>3</sup> ) |                      |
| 0Ag-400    | 10.4420 (8)            | 37.405 (4)   | 3532.1 (9)                 | β-TCP                |
| 0Ag-500    | 10.4362 (8)            | 37.400 (4)   | 3527.6 (8)                 | β-TCP                |
| 0Ag-600    | 10.434 (2)             | 37.39 (1)    | 3525 (2)                   | β-TCP                |
| 0Ag-700    | 10.4346 (8)            | 37.394 (4)   | 3526.0 (5)                 | β-TCP                |
| 0Ag-800    | 10.4330 (4)            | 37.391 (2)   | 3524.6 (3)                 | β-TCP                |
| 0Ag-900    | 10.4339 (4)            | 37.389 (2)   | 3525.1 (2)                 | β-TCP                |
| 0Ag-1000   | 10.4337 (5)            | 37.390 (2)   | 3525.0 (3)                 | β-TCP                |
| 0Ag-1100   | 10.434 (1)             | 37.388 (4)   | 3525.0 (6)                 | β-TCP                |
| 0Ag-1200   | 10.436 (2)             | 37.37 (1)    | 3525 (1)                   | β-TCP                |
| 25Ag-400   | 10.4436 (6)            | 37.412 (3)   | 3533.8 (4)                 | β-TCP                |
| 25Ag-500   | 10.436 (2)             | 37.36 (1)    | 3523 (2)                   | Ag <sup>+</sup> :TCP |
| 25Ag-600   | 10.4337 (8)            | 37.338 (4)   | 3520.1 (5)                 | Ag <sup>+</sup> :TCP |
| 25Ag-700   | 10.4337 (5)            | 37.337 (2)   | 3520.1 (3)                 | Ag <sup>+</sup> :TCP |
| 25Ag-800   | 10.4331 (3)            | 37.352 (2)   | 3521.0 (2)                 | Ag <sup>+</sup> :TCP |
| 25Ag-900   | 10.4327 (5)            | 37.352 (2)   | 3520.7 (3)                 | Ag <sup>+</sup> :TCP |
| 25Ag-1000  | 10.4340 (8)            | 37.375 (4)   | 3523.8 (6)                 | β-TCP                |
| 25Ag-1100  | 10.433 (2)             | 37.382 (7)   | 3524 (1)                   | β-TCP                |
| 25Ag-1200  | 10.435 (2)             | 37.37 (1)    | 3524 (1)                   | β-TCP                |
| 100Ag-400  | /                      | /            | /                          |                      |
| 100Ag-500  | 10.438 (2)             | 37.40 (1)    | 3528 (1)                   | β-TCP                |
| 100Ag-600  | 10.4342 (8)            | 37.341 (4)   | 3520.7 (6)                 | Ag <sup>+</sup> :TCP |
| 100Ag-700  | 10.4331 (6)            | 37.338 (3)   | 3519.7 (4)                 | Ag <sup>+</sup> :TCP |
| 100Ag-800  | 10.4333 (5)            | 37.352 (2)   | 3521.2 (3)                 | Ag <sup>+</sup> :TCP |
| 100Ag-900  | 10.4328 (4)            | 37.350 (2)   | 3520.7 (3)                 | Ag <sup>+</sup> :TCP |
| 100Ag-1000 | 10.4346 (9)            | 37.366 (5)   | 3523.4 (6)                 | β-TCP                |
| 100Ag-1100 | 10.434 (2)             | 37.372 (9)   | 3524 (1)                   | β-TCP                |
| 100Ag-1200 | 10.436 (2)             | 37.366 (9)   | 3524 (2)                   | β-TCP                |