Electronic Supplementary Material (ESI) for Nanoscale Advances.

Supplementary Information for:

Synthesis and characterization of silver nanoparticle-loaded amorphous calcium phosphate microspheres for dental applications

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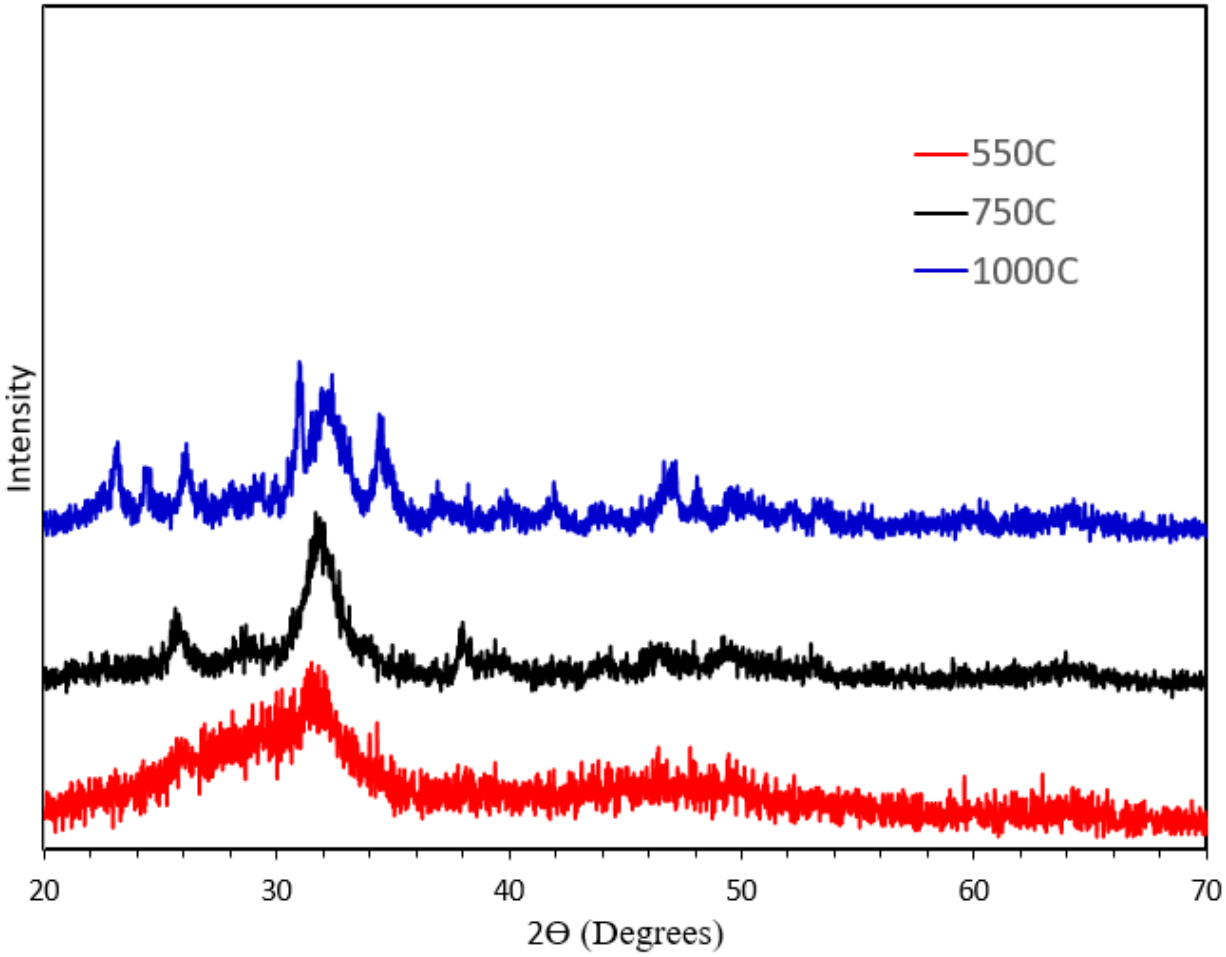

Figure S1. XRD analysis of the silver-ACP nanomaterial containing 5 mol% silver, at different reaction temperatures. The material started to become crystalline as the temperature was increased above 550ºC.

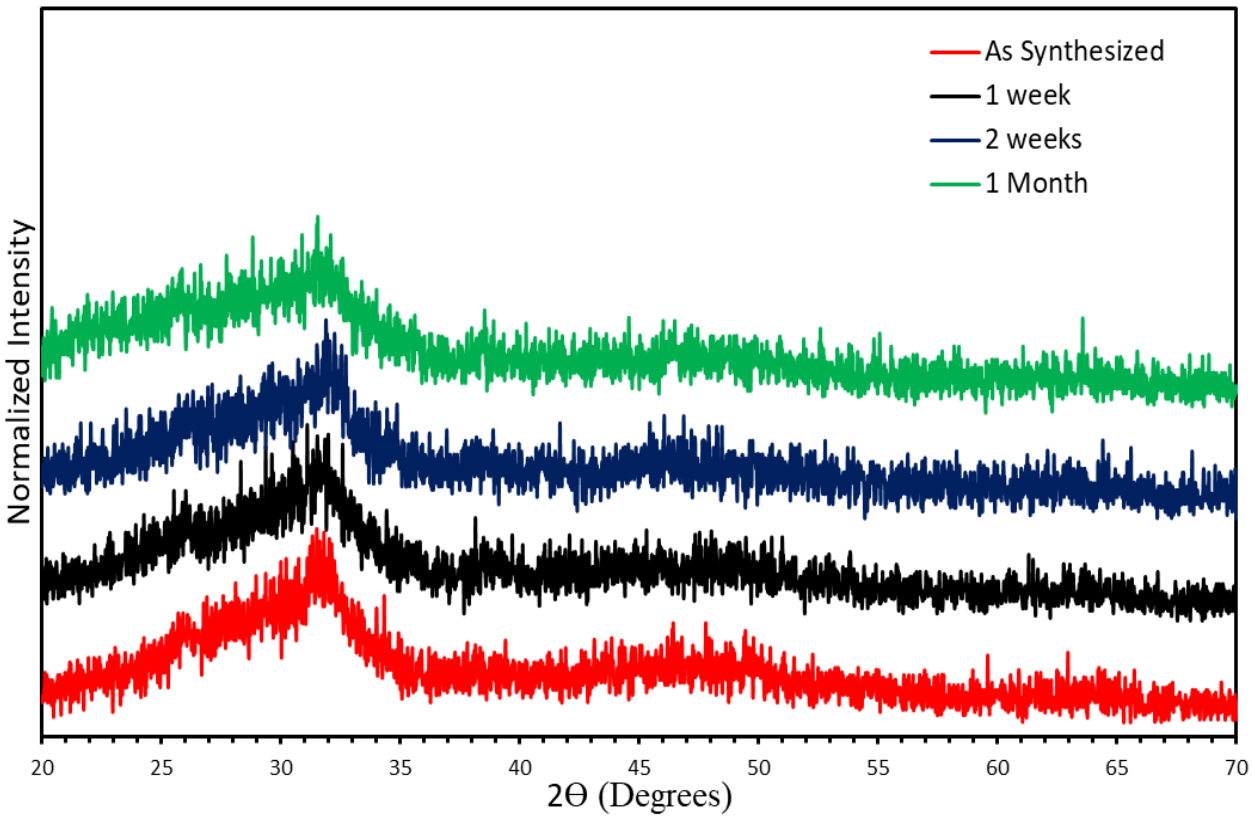

Figure S2. XRD patterns of silver-ACP nanoparticles containing 5 mol% silver after varying periods of air exposure at ambient conditions, as labelled. The synthesized material was exposed to air at room temperature conditions and XRD data was obtained every week for a period of 1 month. No transition of ACP into a crystalline calcium phosphate phase was seen even after 1 month.

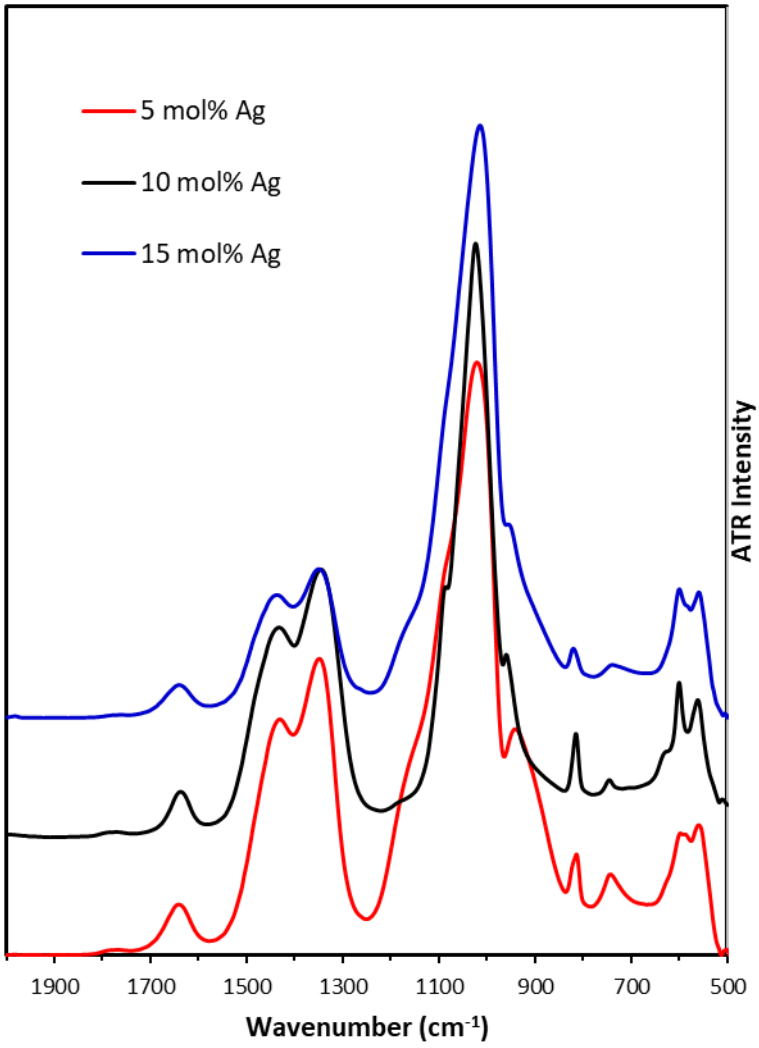

Figure S3. Comparative FTIR spectra of 5, 10, and 15 mol% Ag-containing silver-ACP nanoparticles. As seen from the figure, there is no change in the bond vibration frequencies. Although there are slight differences in peak shapes between samples, particularly in the 1100-1200 cm^{-1} range, there are no new peaks that would indicate the formation of silver phosphate or any other compound with silver, even as the silver concentration is increased.

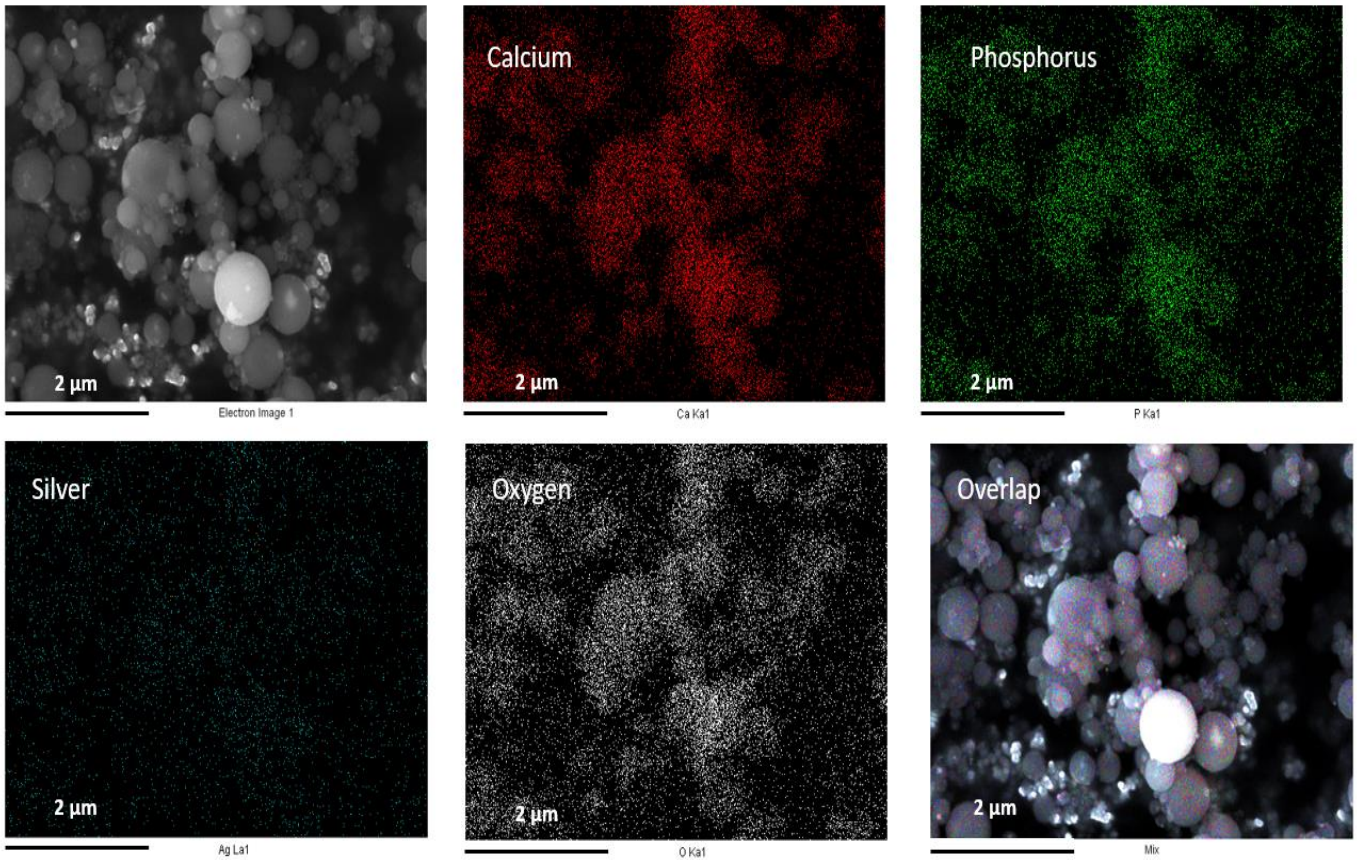

Figure S4. EDS elemental mapping of silver-ACP particles with 10 mol% Ag content.

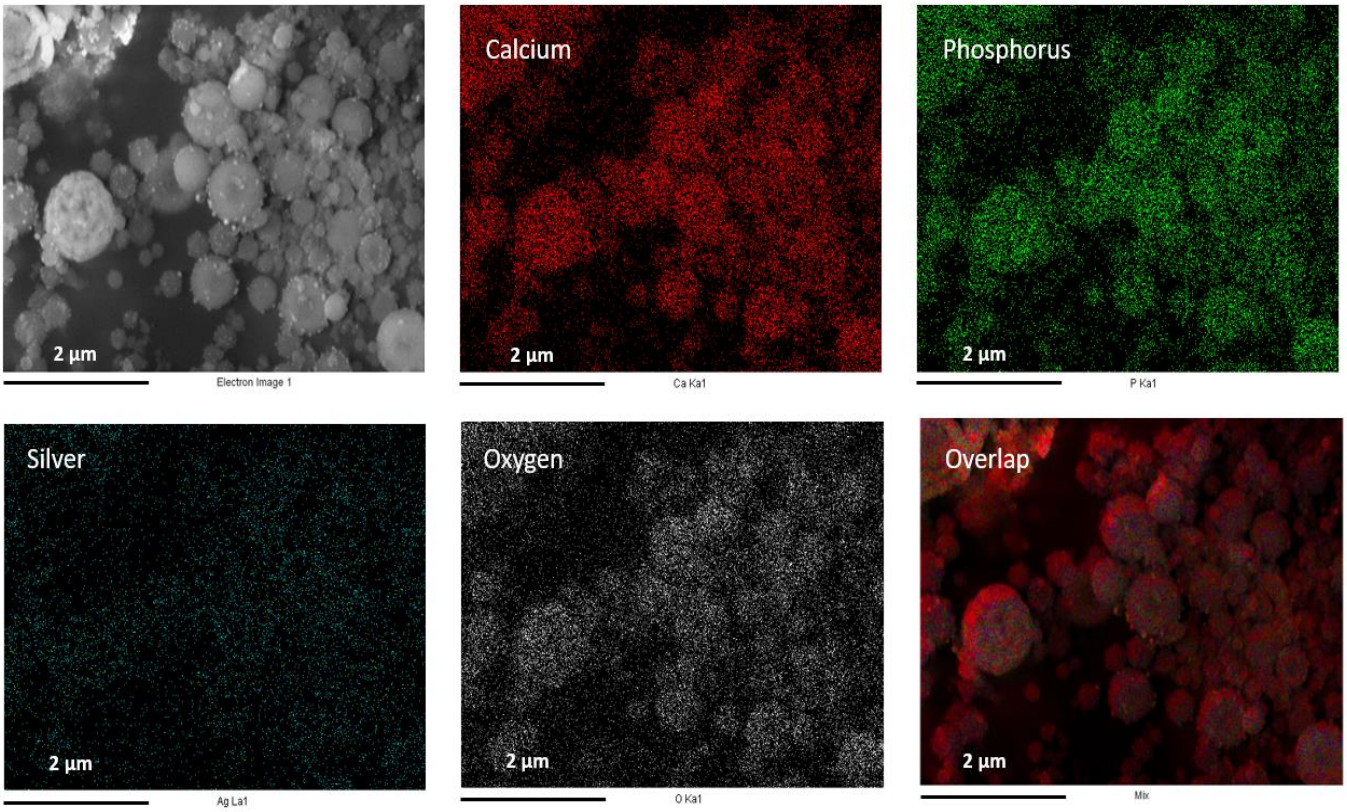

Figure S5: EDS elemental mapping of silver-ACP particles with 15 mol% Ag content.

The following table shows the elemental composition as detected by EDS. These results clearly show that the molar percentages of silver in each case match the composition in the precursor solution. That is, the measured ratio of atomic percent silver to atomic percent calcium matches that ratio in the precursor solution.

Table S1. EDS analysis comparison for 5, 10, and 15 mol% Ag-containing silver-ACP nanomaterials.*

	5 mol % Ag		10 mol % Ag		15 mol % Ag	
	Weight%	Atomic%	Weight%	Atomic%	Weight%	Atomic%
O	69.85	84.60	75.71	88.56	69.93	85.63
P	10.16	6.35	7.98	4.82	9.31	5.91
Ca	17.96	8.68	12.92	6.03	14.97	7.35
Ag	2.04	0.37	3.04	0.59	6.09	1.11
Totals	100.00		100.00		100.00	

* Note: The higher-than-expected amounts of oxygen and lower-than-expected amounts of other atoms may be ascribed to water absorption of the nanomaterials (from the room atmosphere) and the interference from the "carbon tape" support film upon which the nanomaterial powder was deposited for EDS analysis.