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L. Gu^{1*}, Y.K. Kim^{2*}, Y. Liu^{3*}, H. Ryou⁴,
C.E. Wimmer⁵, D. Lin⁶, D.D. Arola⁴,
S.W. Looney⁵, D.H. Pashley⁷, and F.R. Tay^{7,8†}

¹Department of Operative Dentistry and Endodontics, Guanghua School of Stomatology, Sun Yat-sen University, Guangzhou, China; ²Department of Conservative Dentistry, School of Dentistry, Kyungpook National University, Daegu, Korea; ³Department of Stomatology, Tongji Hospital, Huazhong University of Science and Technology, Wuhan, China; ⁴Laboratory of Advanced Materials and Processes, Mechanical Engineering Department, University of Maryland Baltimore County, Baltimore, MD, USA; ⁵Department of Biostatistics, Medical College of Georgia, Augusta, GA, USA; ⁶Department of Stomatology, The First Hospital of Wuhan, Wuhan, China; and ⁷Department of Oral Biology and ⁸Department of Endodontics, School of Dentistry, Medical College of Georgia, Augusta, GA 30912-1129, USA; *authors contributing equally to this work; †corresponding author, ftay@mcc.edu

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APPENDIX

METHOD FOR DETERMINING COMPLETE DEMINERALIZATION OF MINERALIZED DENTIN POWDER

To ensure complete demineralization of the dentin powder, we periodically tested the acid demineralizing solution qualitatively

Biomimetic Analogs for Collagen Biomineralization

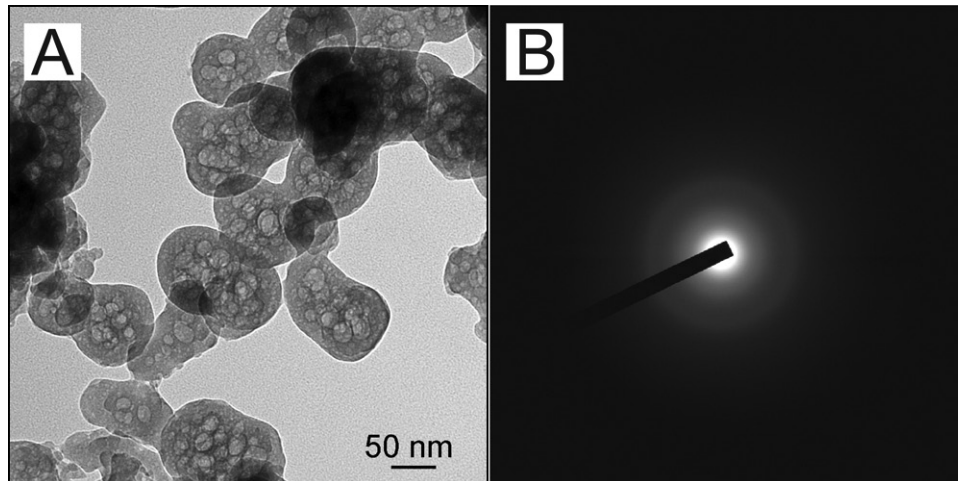
for calcium using a 30 wt% dipotassium acetate solution. When we could no longer obtain a positive test for calcium (*i.e.*, white precipitate), we knew that all minerals had been removed.

Appendix Table. Estimates of $K_{1/2}$ for Adsorption and Desorption after the Use of Two Time Periods of Chemical Phosphorylation of Sodium Trimetaphosphate ($\text{Na}_3\text{P}_3\text{O}_9$) to Collagen Matrices

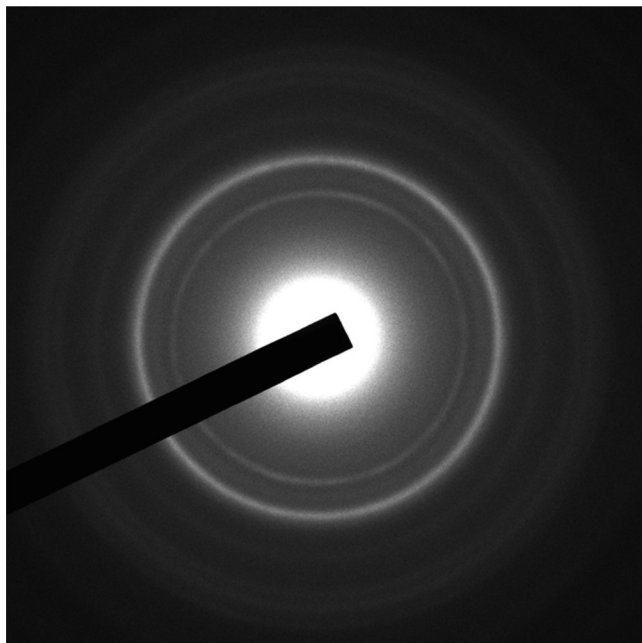
	Treatment Time	B_{max}	$B_{max}/2$	Estimate of $K_{1/2}$	95% CI ($K_{1/2}$)	Approx. SE
Adsorption	5 min	96.036	48.018	1.021*	1.010-1.031	0.005
	1 hr	95.849	47.924	0.934*	0.909-0.958	0.013
Desorption	5 min	74.630	37.315	1.033	0.992-1.075	0.021
	1 hr	79.322	39.661	1.054	0.963-1.149	0.048

CI, confidence interval; SE, standard error.

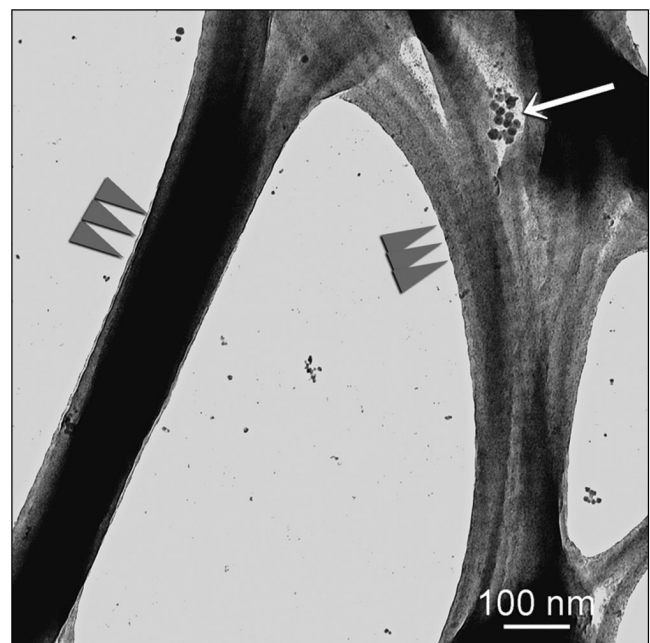
* Indicates a statistically significant difference ($p < 0.001$) between 5 min and 1 hr in the adsorption group.



Appendix Figure 1. TEM and electron diffraction of amorphous calcium phosphate. **(A)** High magnification of the polyacrylic-acid-stabilized amorphous calcium phosphate nanoprecursors shown in Fig. 2C in the main paper. **(B)** The amorphous nature of nanoprecursors was confirmed by the diffuse nature and absence of ring patterns in the accompanying selected area electron diffraction image.



Appendix Figure 2. Since our interest is in biologic apatite and not stoichiometric hydroxyapatite, we include a standard of apatite that we prepared from non-demineralized dentin for comparison with the intrafibrillar minerals identified from the mineralized collagen fibrils shown in Figs. 3C and 3D in the main paper.



Appendix Figure 3. Unstained TEM image of moderately mineralized reconstituted type I collagen fibrils derived from calf skin. The collagen was treated for 5 min with 2.8 wt% hydrolyzed and pH-adjusted sodium trimetaphosphate and subjected to mineralization in a 0.28 mM polyacrylic-acid-containing simulated body fluid placed over a calcium- and hydroxyl-ion-releasing Portland-cement-based resin composite. The periodic external elevations along the mineralized fibrillar surfaces (solid gray arrowheads) corresponded to the periodicity observed within the fibrils. Arrow: remnant amorphous calcium phosphate nanoprecursors.