Supplementary Information (SI) for Materials Advances.

Production of Assorted Nanoparticle Structures using Silver-Cerium Redox Chemistry for Inactivation of Coronavirus

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		Peak Center	FWHM	Average Crystallite Diameter(nm)
1:1.2 (60-min mixing)	**Ce**	28.55	1.277	6.418
	Ag	38.22	0.5625	14.95
1:1 (60-min mixing)	**Ce**	28.29	1.202	6.813
	Ag	37.95	0.4499	18.67
1:0.5 (60-min mixing)	**Ce**	28.60	0.8798	9.319
	Ag	38.17	0.3606	23.32
1:0.2 (60-min mixing)	**Ce**	28.57	0.8423	9.732
	Ag	38.14	0.3659	22.97
1:1.2 (2-min mixing)	**Ce**	28.54	1.000	8.190
	Ag	38.16	0.3874	21.70
1:0.5 (2-min mixing)	**Ce**	28.51	1.005	8.157
	Ag	38.10	0.3820	22.00
1:0.2 (2-min mixing)	**Ce**	28.67	0.9573	8.565
	Ag	38.23	0.4521	18.

Table S1 Average Crystallite Diameter determined via the Scherrer equation. Lower angle peaks for high density atomic planes were baseline-corrected and fit with Gaussian functions in *Origin* graphing software. Full-width half maxima and analytically determined peak centers were then used to calculate average crystallite diameters using the Scherrer equation as

$$D_{hkl} = k * \lambda / (B_{hkl} * \cos(\theta)) \quad (1)$$

where D_{hkl} is the calculated average crysal diameter, k is a shape factor approximated as 0.9, λ is the x-ray source wavelength (1.540598 Å), and θ is the Bragg angle of the diffraction peak (hkl).

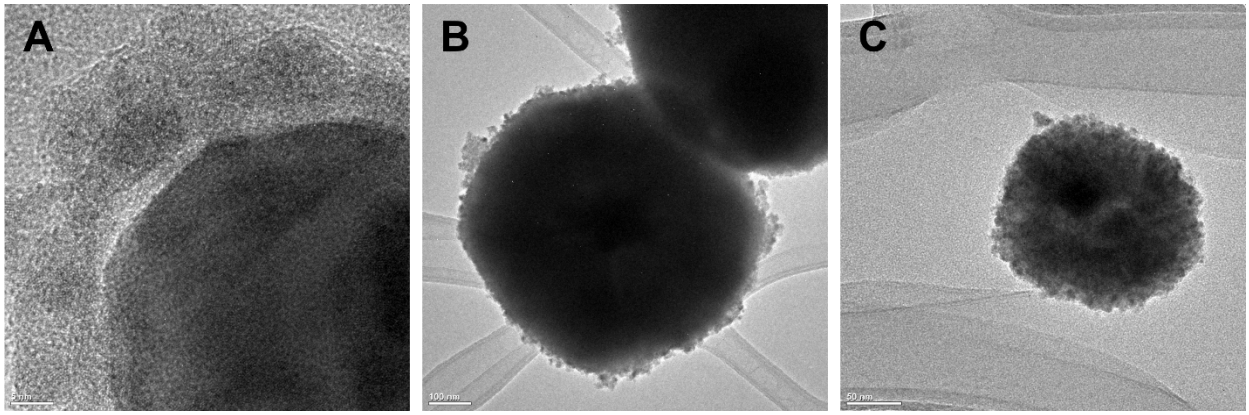

Figure S1 Additional High-resolution Transmission Electron Microscopy images. Formulations 1.2, 0.5, and 0.2 images, A to C, respectively.

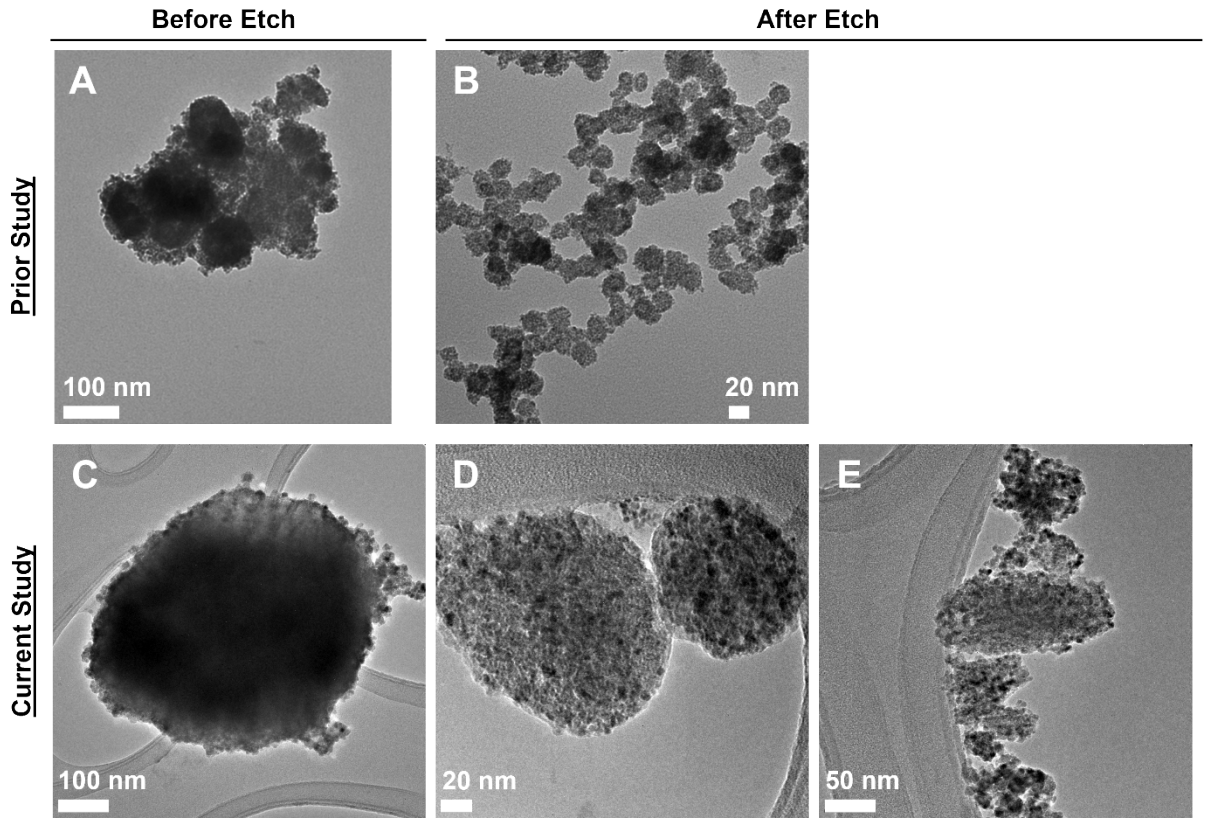

Figure S2 Comparison between Nanoparticles from Prior and Current Synthesis Methods before and after Etching. TEM images of AgCNP1 (**A**,**B**) and *Formulation 0.2* (**C-E**) before (**A**,**C**) and after (**B**,**D**,**E**) etching in concentrated ammonium hydroxide. Following etching, the surface of particles appear to be decorated with small silver nanophases. Dissolution of larger silver phases may occur in *Formulation 0.2* (**C**), as seen for AgCNP1 (**A**), and potentially lead to re-deposition of silver at the particle surface from diamine complexes.

A

Sample Name	SOD Activity (%)		
	0.08 µM	**0.83 µM**	**8.3 µM**
Formulation 0.2	5.55+/-9.63	22.2+/-9.62	98.6+/-0.25
Formulation 0.5	0.00+/-0.00	33.3+/-0.01	99.6+/-0.25
Formulation 1.2	0.00+/-0.00	72.2+/-9.62	99.3+/-0.19

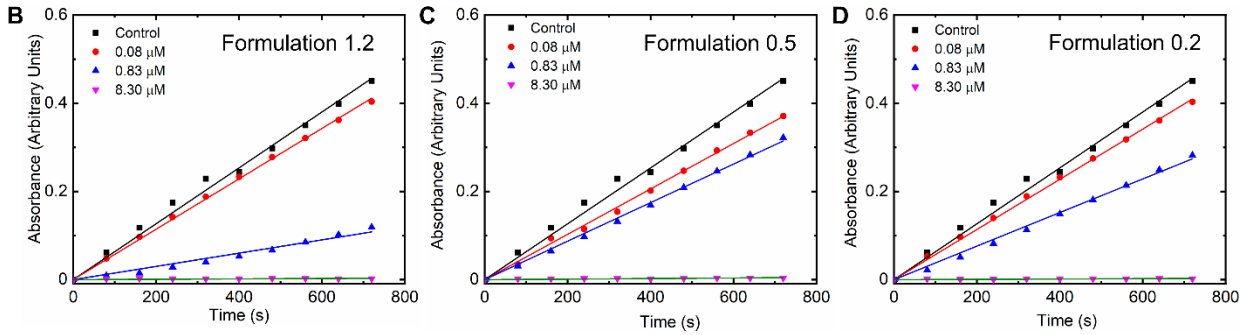

Figure S3 Superoxide Dismutase-mimetic assay. Determined percent SOD activity data shows a positive correlation with nanoparticle concentration and silver content.