Supporting Information

Synergistic Physical and Chemical Enhancement Effects Observed on SERS Substrates of Silver Coated Barrier-Type Anodic Alumina

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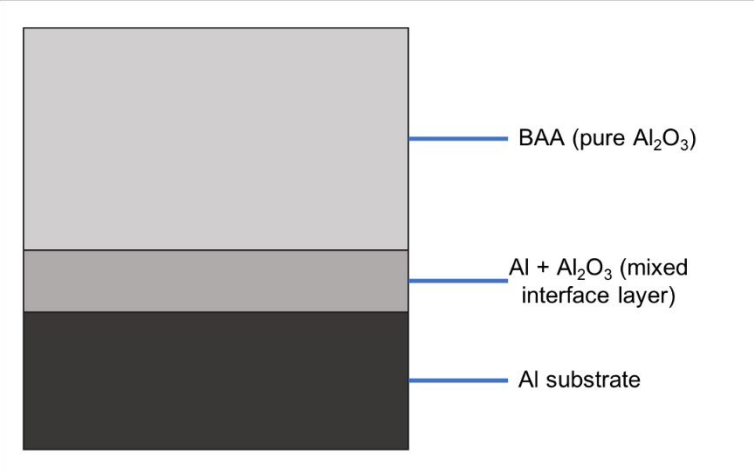

Figure S1. Model used for fitting ellipsometry data of BAA showing a pure Al_2O_3 layer and a mixed Al/Al_2O_3 layer at the Al substrate interface.

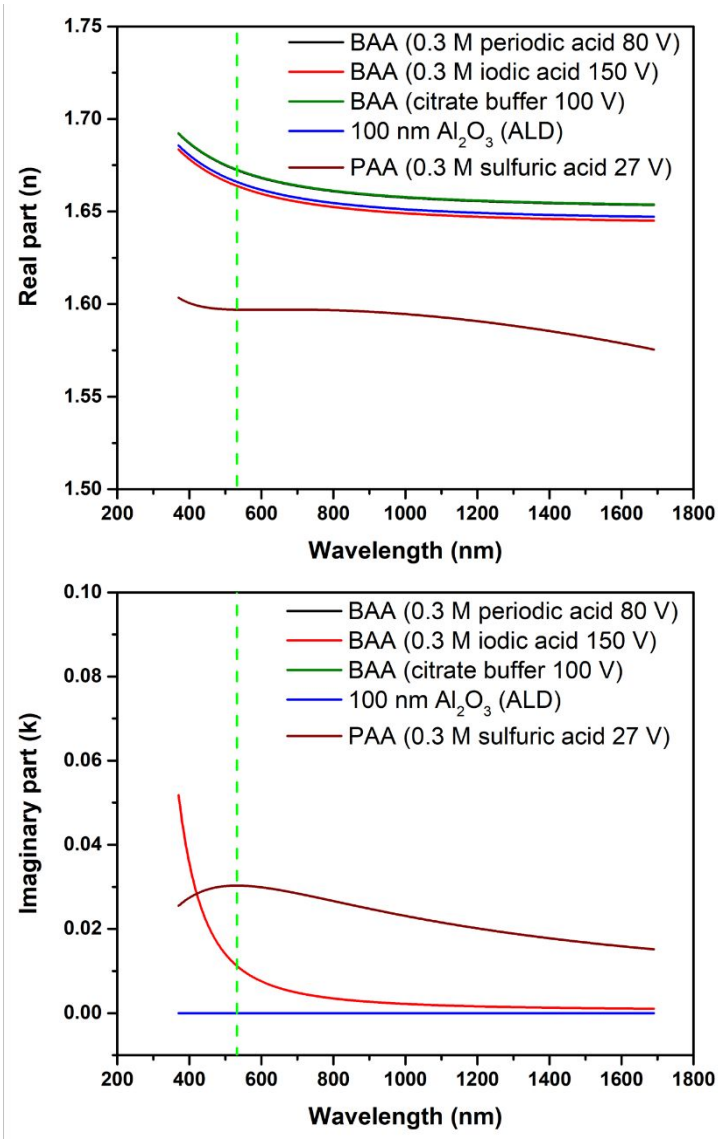

Figure S2. Variation of the real (n) and imaginary (k) parts of the complex refractive index of different alumina films (BAA, PAA and ALD-deposited Al_2O_3) with wavelength. For the real part (n) of the refractive index the curves for BAA (0.3 M periodic acid 80 V) and BAA (citrate buffer 100 V) are very similar and lie on top of each other. The imaginary part (k) of the refractive index of 100 nm Al_2O_3 (ALD), BAA (0.3 M periodic acid 80 V) and BAA (citrate buffer 100 V) show the same value of k=0 throughout the whole spectrum and their curves lie on top of each other.

Table S1. Complex refractive index of different alumina films obtained through anodization (BAA and PAA) or ALD deposition at 532 nm.

Alumina film	Real part (n)	Imaginary part (k)
PAA (0.3 M sulfuric acid 27 V)	1.597	0.030
BAA (0.3 M periodic acid 80 V)	1.672	0
BAA (0.3 M iodic acid 150 V)	1.664	0.011
BAA (citrate buffer 100 V)	1.673	0
100 nm Al_2O_3 (ALD)	1.666	0

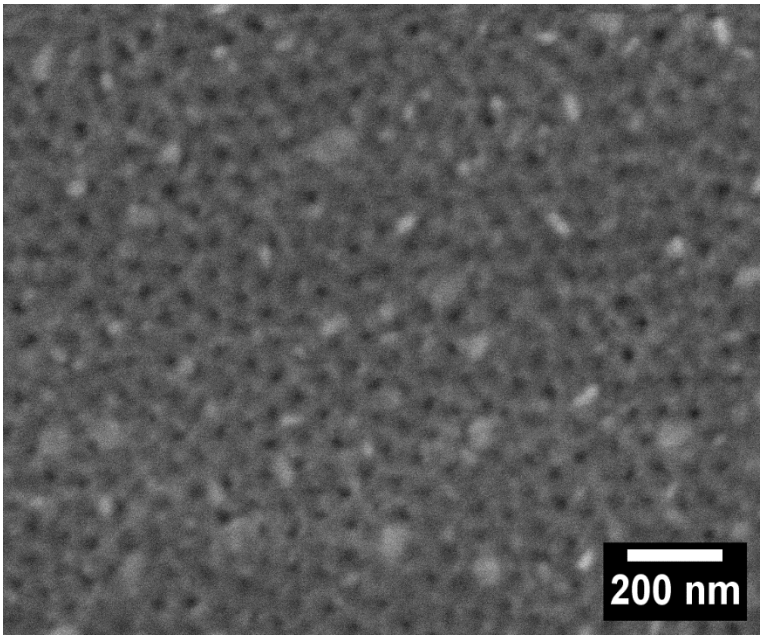

Figure S3. SEM image of PAA from 0.3 M sulfuric acid at 27 V sputter-coated with 5 nm Ag showing the narrowed pores after silver sputtering acting as hot spots.

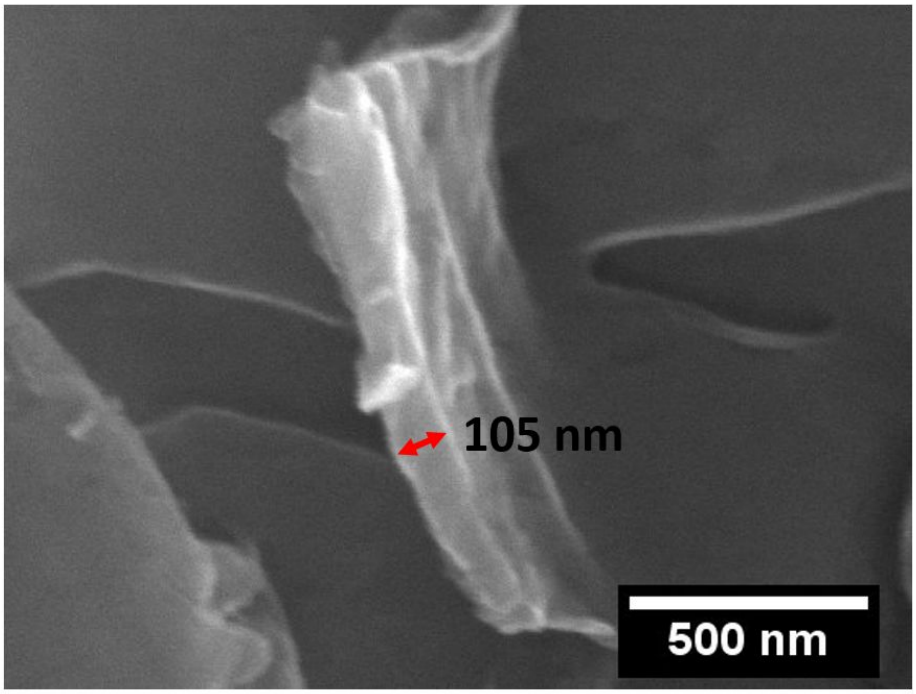

Figure S4. SEM image showing the cross-section of the BAA obtained from the anodization of aluminum in citrate buffer at 50 V revealing a thickness of about 105 nm.