

Supporting information for:

**Development of ordered metal nanoparticle arrangements on solid supports by
combining a green nanoparticle synthetic method and polymer templating for
sensing applications**

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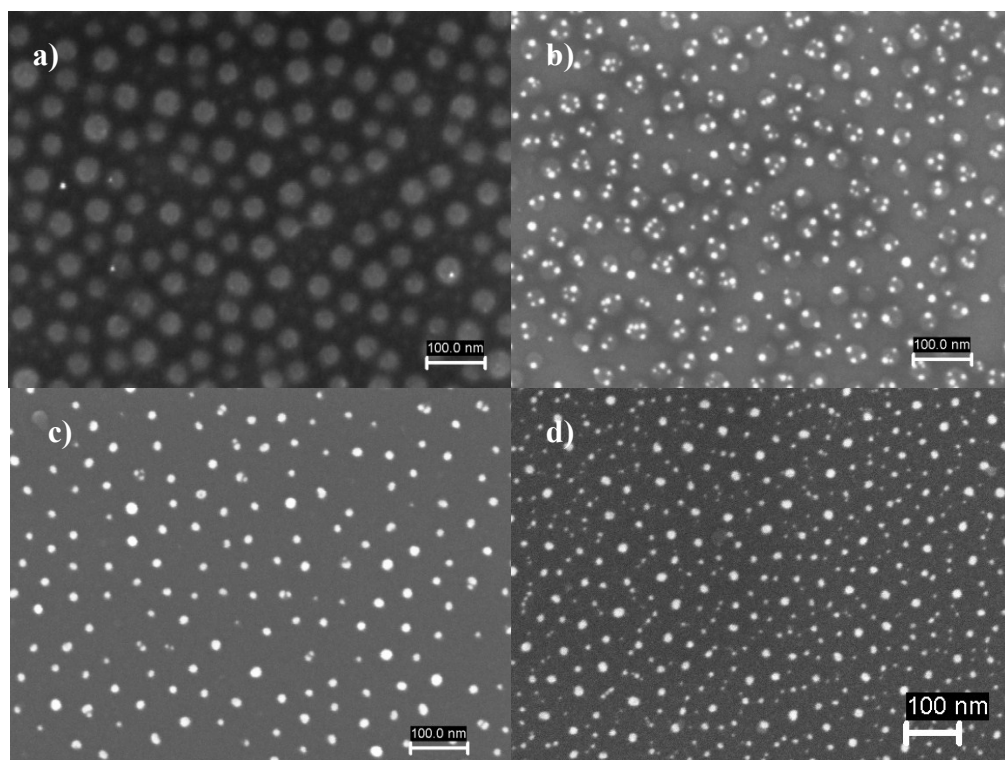


Figure S1: SEM images of hybrid thin polymeric substrates after a) 0; b) 30; c) 60 and d) 90 s of O_2 plasma exposure.

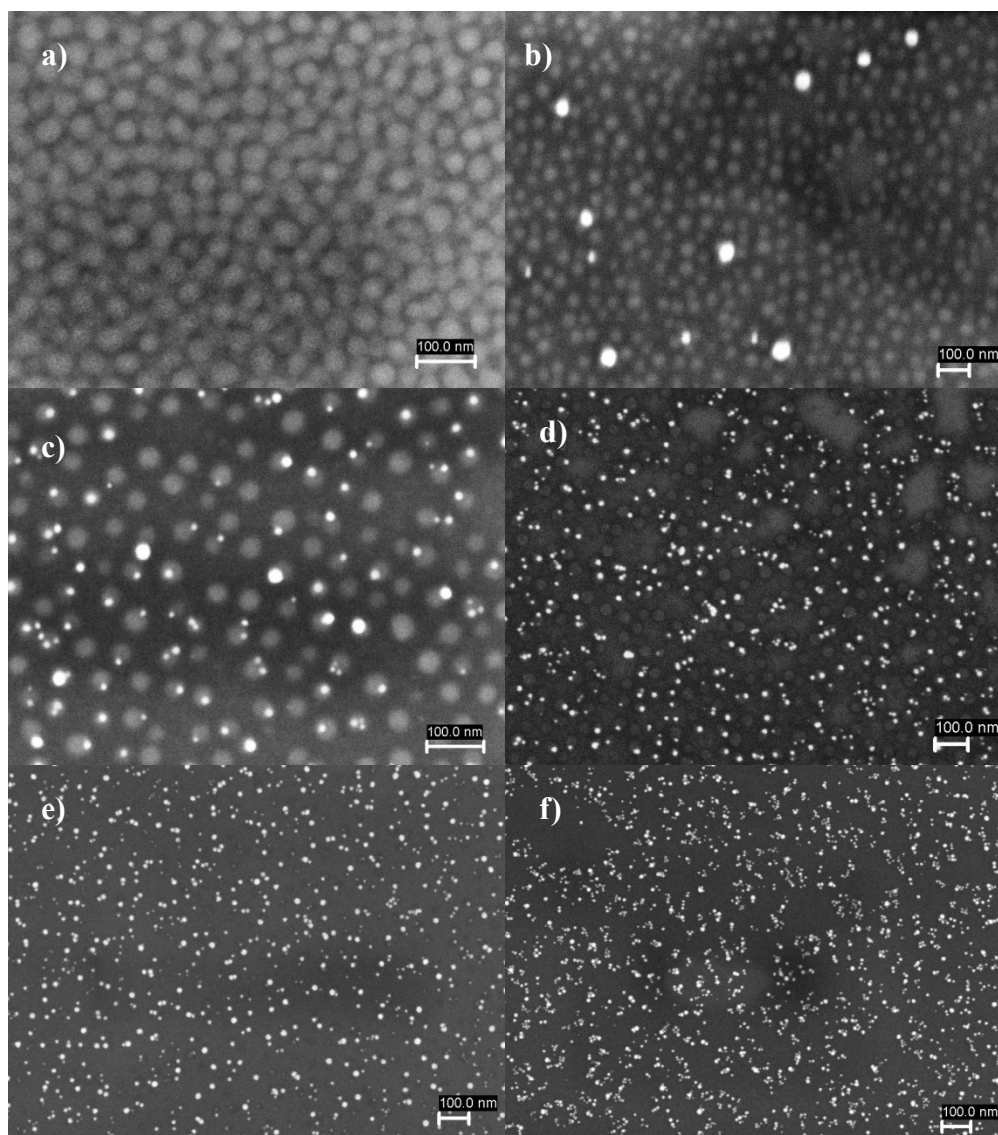


Figure S2: SEM images of hybrid thin polymeric substrates after a) 1; b) 3; c) 6 h; d) 24; e) 48 and f) 72 h of UV irradiation ($\lambda = 254$ nm).

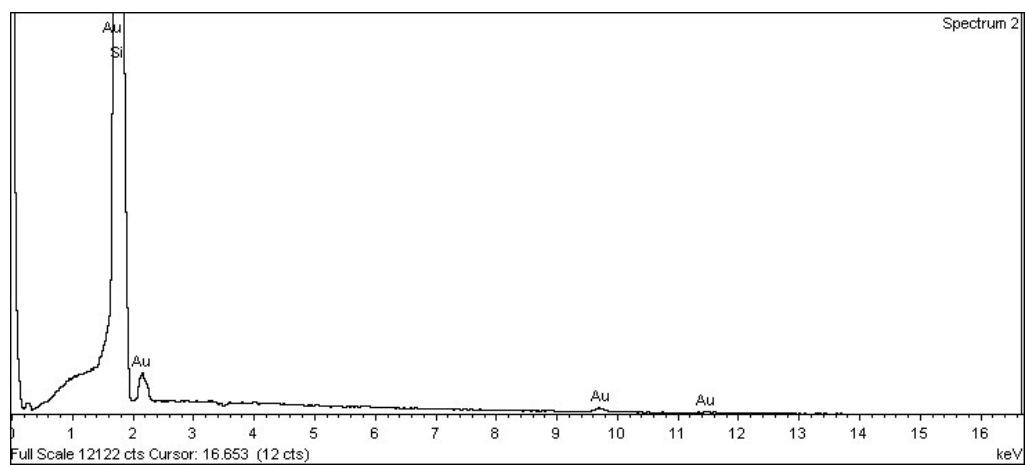


Figure S3: EDX spectrum of clustered Au Np arrays after 15 s O₂ plasma and 24 h UV illumination.

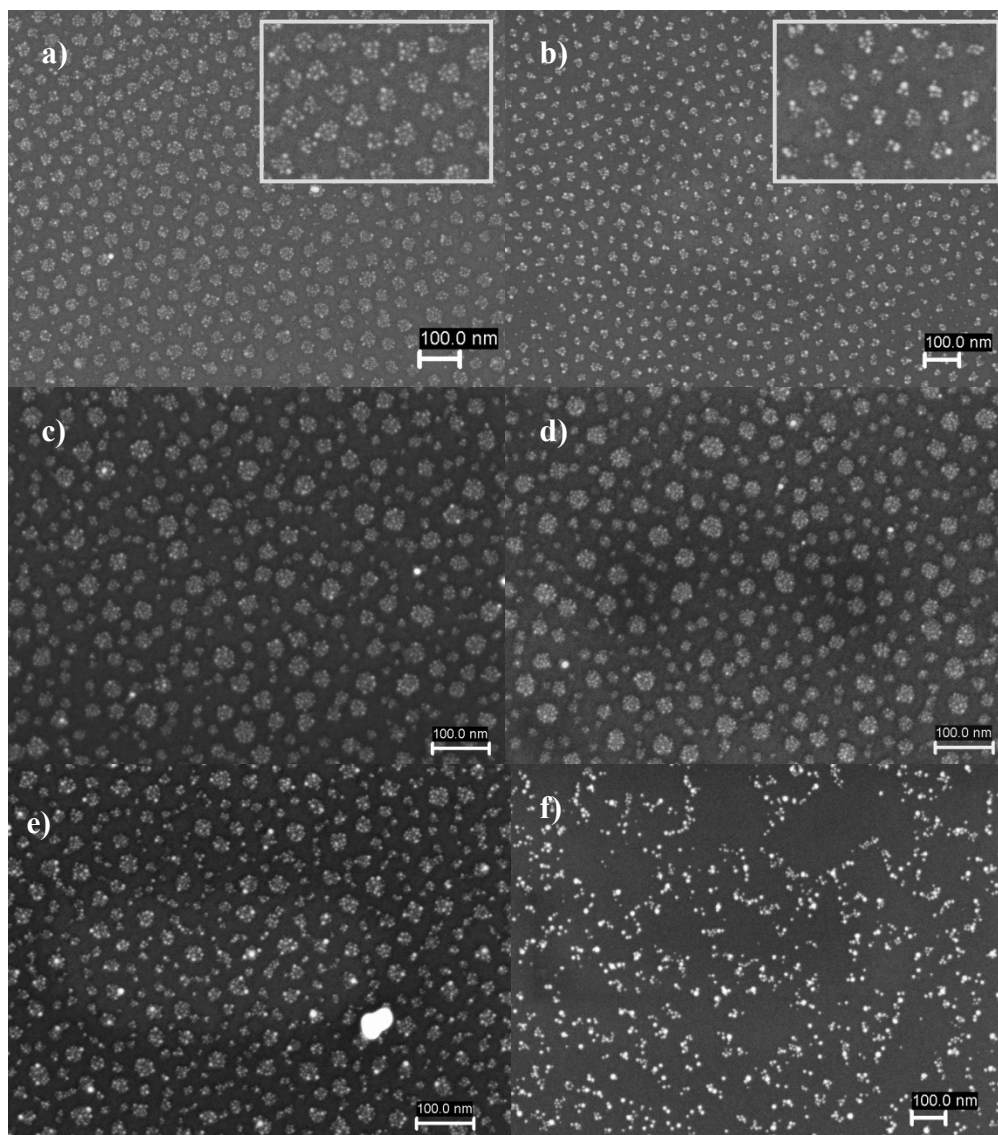


Figure S4: SEM images of hybrid thin polymeric substrates after 15 s of O₂ plasma followed by a) 24; b) 48, c) 72, d) 96, e) 120 h, and f) 192 h of UV irradiation ($\lambda = 254$ nm).

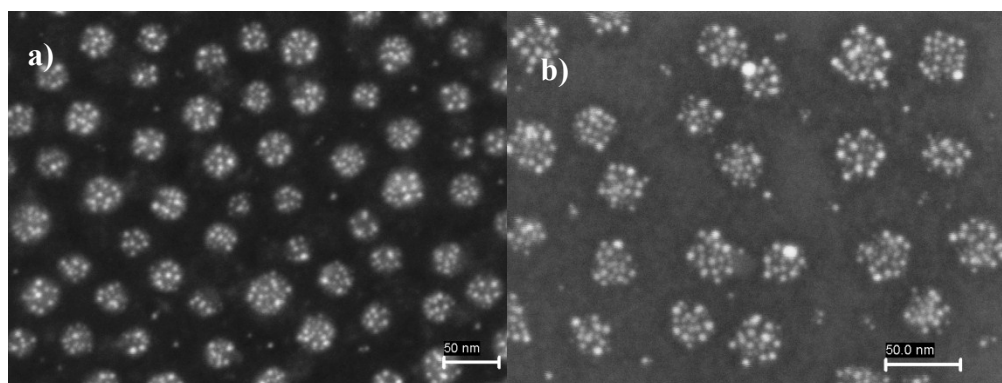


Figure S5: SEM images of hybrid thin polymeric substrates after 15 s of O₂ plasma obtained in 10 mM HEPES solution at R = 0.9.

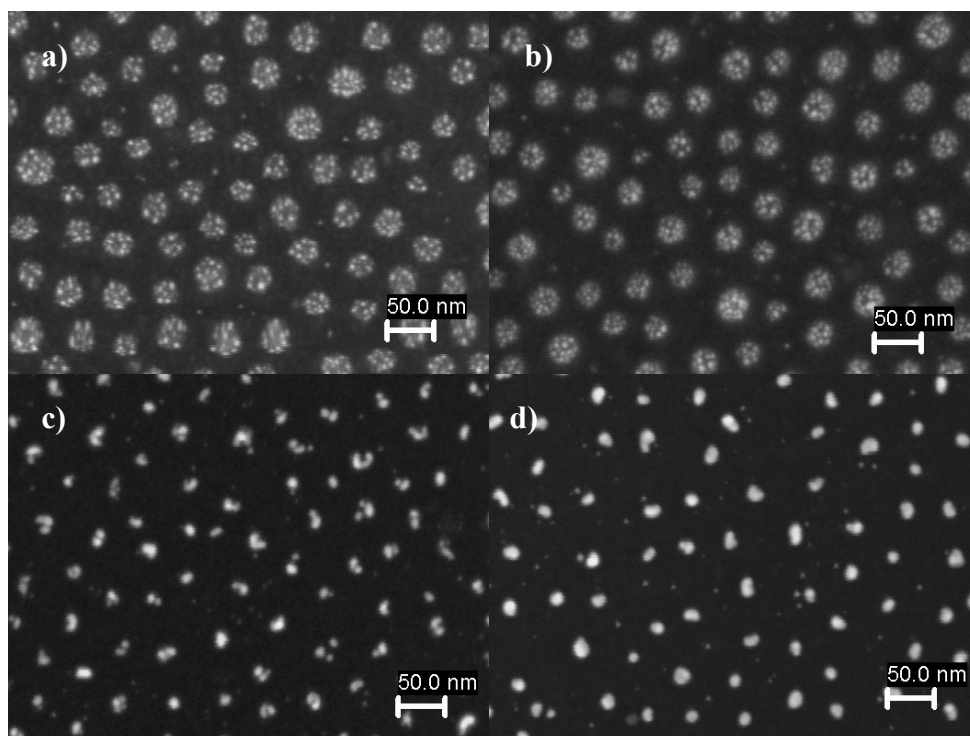


Figure S6: SEM images of O₂ plasma exposure effect on the formation of single NP and clustered NP arrays: a) 30 s, b) 60 s, c) 90 s, and d) 150 s min for hybrid films of R = 0.9 incubated in 450 mM HEPES for 40 min.

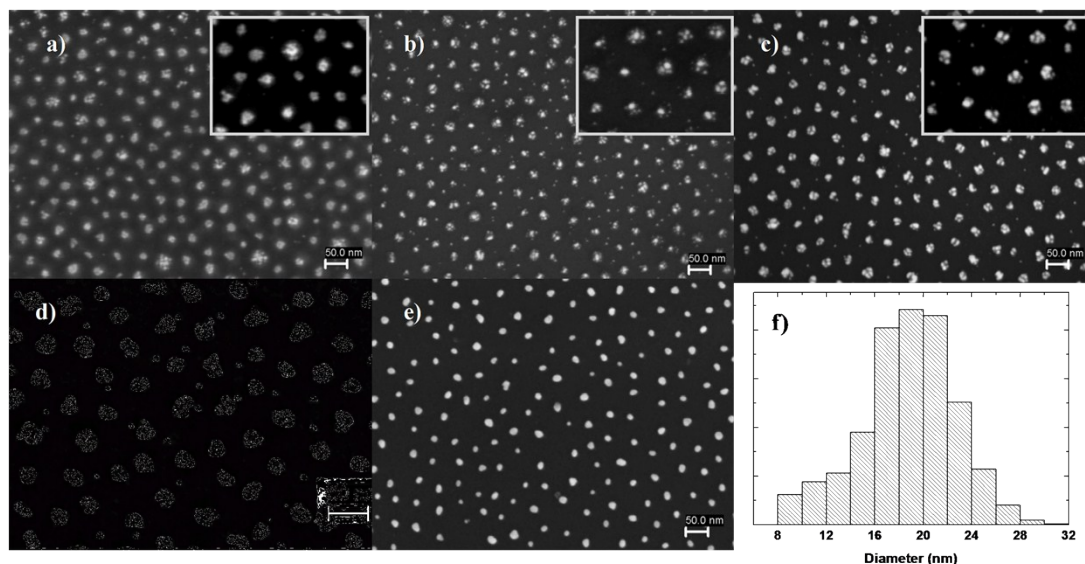


Figure S7: SEM images of O₂ plasma exposure effect on the formation of single NP and clustered NP arrays: a) 15 s b) 30 s, c) 60 s, d) 120 s, and e) 180 s min for hybrid films of R = 0.9 incubated in 1.5 M HEPES for 40 min. f) Size distribution of resulting singly dispersed NP arrays obtained in e).

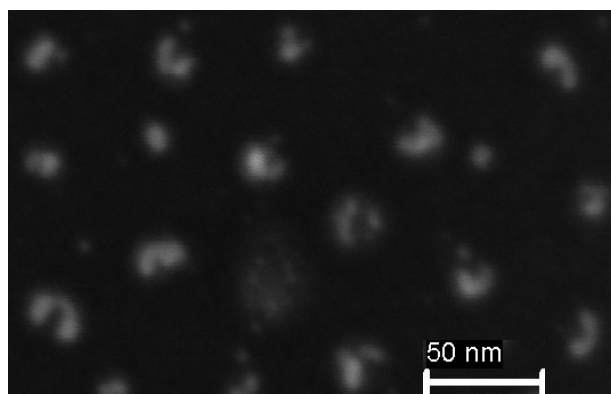


Figure S8: Enlarged SEM image showing “nanocrescent-like” NPs formed upon fusion of nearest tiny spherical Nps within clusters upon O₂ plasma exposure.

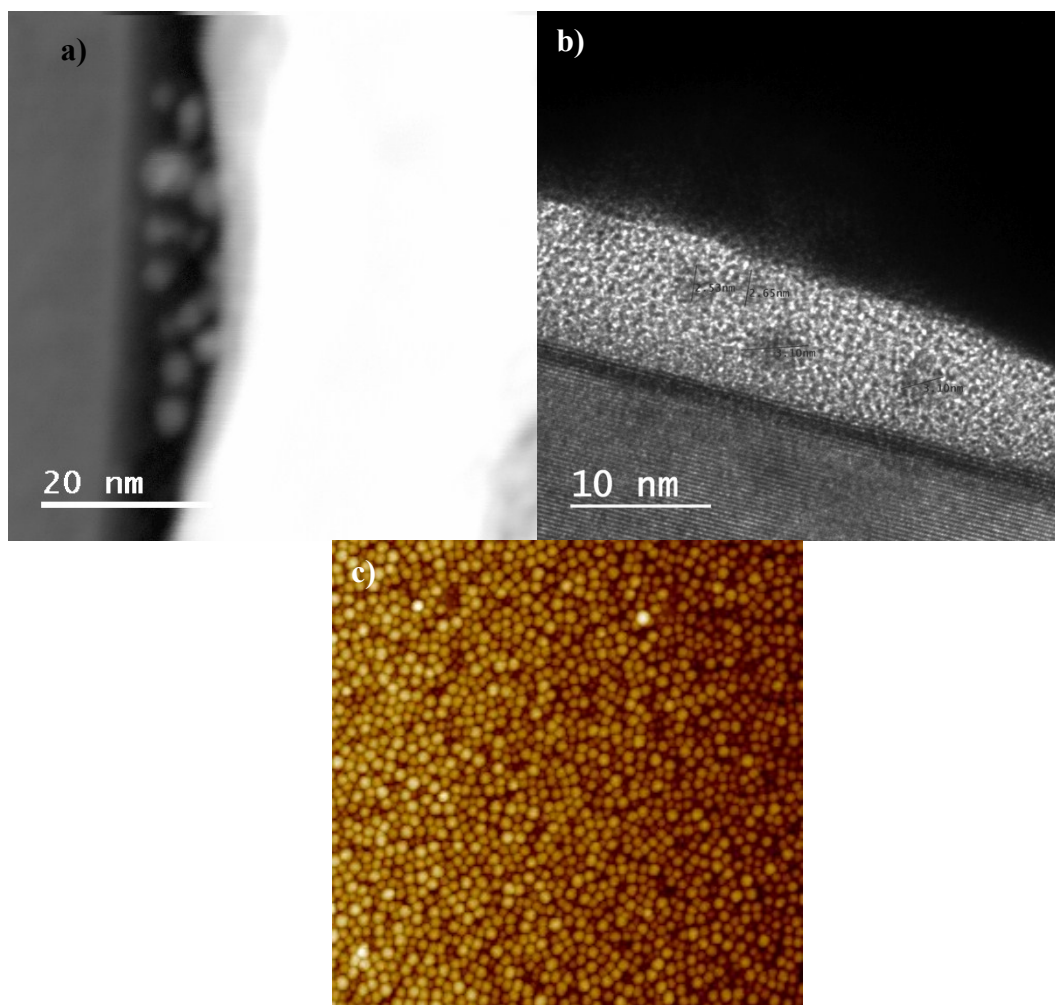


Figure S9: a) Cross-sectional SEM images and b) TEM images of clustered NPs within a single PVP domain. c) AFM images of nanoparticles arrays.