Electronic Supplementary Material (ESI) for Nanoscale.

Supplementary Information For:

Molecular Release from Patterned Nanoporous Gold Thin Films

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Sample analysis

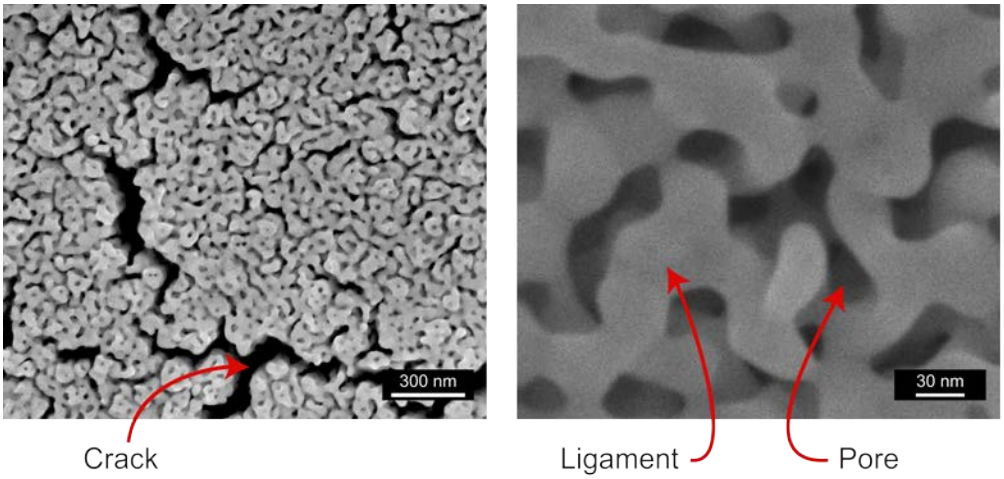

Figure S1. Scanning electron microscope images of nanoporous gold (np-Au) surface illustrate characteristic morphological features.

Table S1. Film thickness and percent crack coverage for different samples. The values indicate averages and standard deviations. Kruskal-Wallis comparisons of percent crack coverage indicate that the samples with different thicknesses (sample set "T") did not exhibit statistical difference ($p>0.05$) while the samples with different morphologies (sample set "M") exhibited statistical difference ($p<0.05$).

	T1	T2	T3	M1	M2	M3
Thickness, nm	380±15	660±10	960±12	960±12	855±34	805±40
Crack coverage, %	2.3±1.1	2.5±1.3	4.3±3.0	4.8±0.9	6.2±1.1	23.4±1.5
Kruskal-Wallis test	p-value: 0.757			p-value: 0.018		

Loading capacity contributions

Table S2. Calculated values for contributions of fluorescein within the pores (pore volume), fluorescein adsorbed onto pore surface (pore surface), and fluorescein adsorbed onto glass coverslip surface (glass surface). The percentages indicate the percent contribution of each category to the calculated total loading capacity.

	T1		T2		T3	
	μg/cm^2	%	μg/cm^2	%	μg/cm^2	%
Pore volume	0.006	12.4	0.011	16.7	0.017	17.3
Pore surface	0.040	83.0	0.053	80.2	0.079	80.6
Glass surface	0.02	4.6	0.02	3.1	0.02	2.1

Half-life versus flux surface area

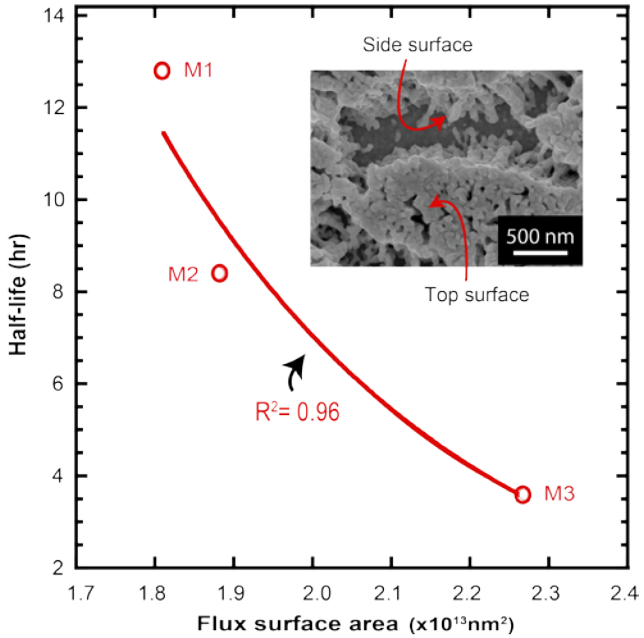

Figure S2. Half-life values for the samples with different morphologies (M1, M2, M3) exponentially decreased with respect to the flux surface area, defined as the sum of top and side surfaces np-Au structures (see inset), of each sample. The flux surface areas were determined by analyzing the scanning electron micrographs of film top views.

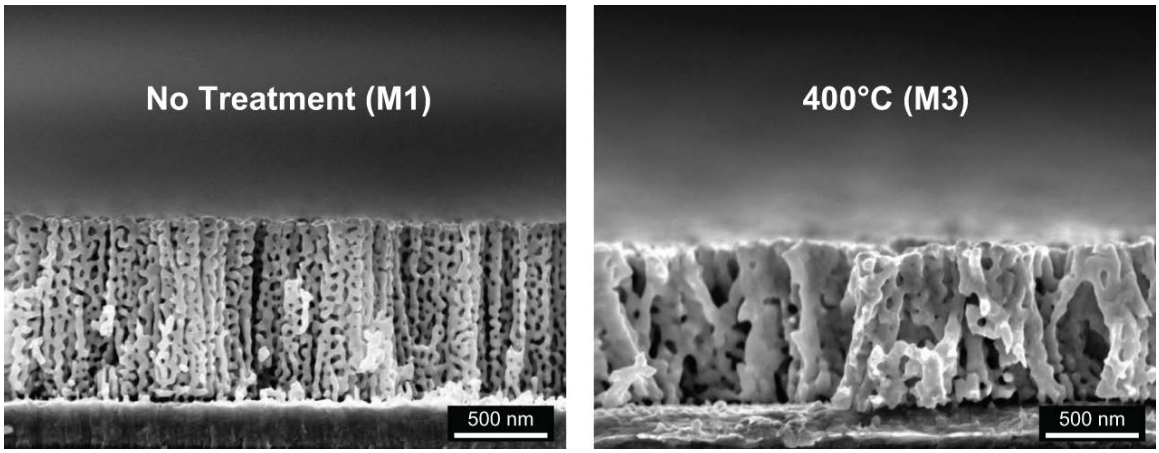

Figure S3. High magnification cross-sectional images reveal that thermal treatment at 400°C leads to significant pore coalescence, thus reduction in nanoporosity and increase in characteristic pore size.