Supplementary material for the paper

XPS and ARXPS for Characterizing Multilayers of Silanes on Gold Surfaces

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Table S1 Parameters used for the calculation of the relative sensitivity factors of the C 1s, Cl 2p, O 1s, S 2p, Si 2p, N 1s signals for M-gold samples and A-gold samples

	Element	Scofield photoionization cross-section (σ) [units of 13600 barns [31]]	Asymmetry factor	Inelastic mean free-path (λ) [nm]	Intensity/energy response function
MPTMS (Overlayer)	C 1s C-Si	1	1.278	3.016	0.866
	C 1s C-S	1	1.278	3.015	0.866
	C 1s Methoxy	1	1.278	3.013	0.866
	O 1s Si-O-Si	2.93	1.278	2.687	0.911
	S 2p	1.677	1.159	3.164	0.842
	Si 2p	0.817	1.140	3.237	0.830
APTES (Overlayer)	C 1s C-Si	1	1.278	3.016	0.797
	C 1s C-S	1	1.278	3.015	0.798
	C 1s Methoxy	1	1.278	3.013	0.798
	C 1s Carbamate	1	1.278	3.01	0.799
	O 1s Si-O-Si	2.93	1.278	2.687	0.862
	S 2p	1.677	1.159	3.164	0.764
	Si 2p	0.817	1.140	3.237	0.747
	N 1s	1.8	1.278	2.867	0.828

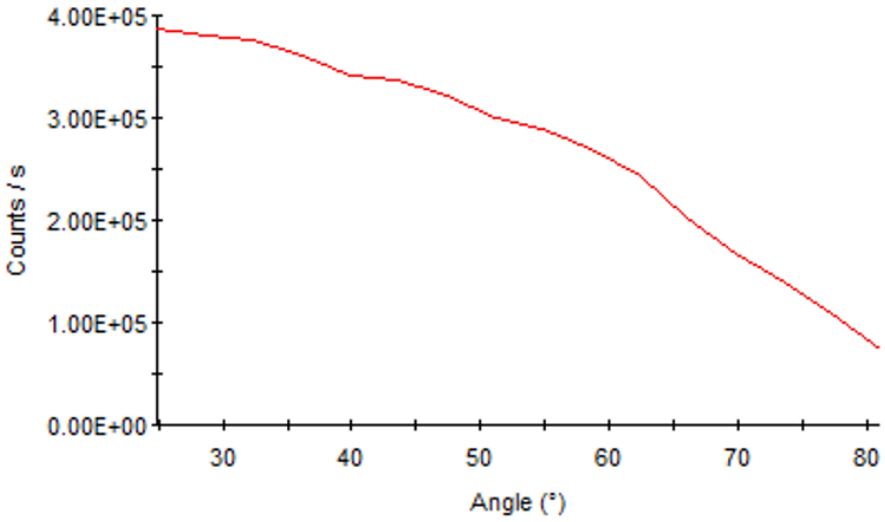

Figure S1 example of angle signature acquired on Ag $3d_{5/2}$ peak at 150 eV pass energy

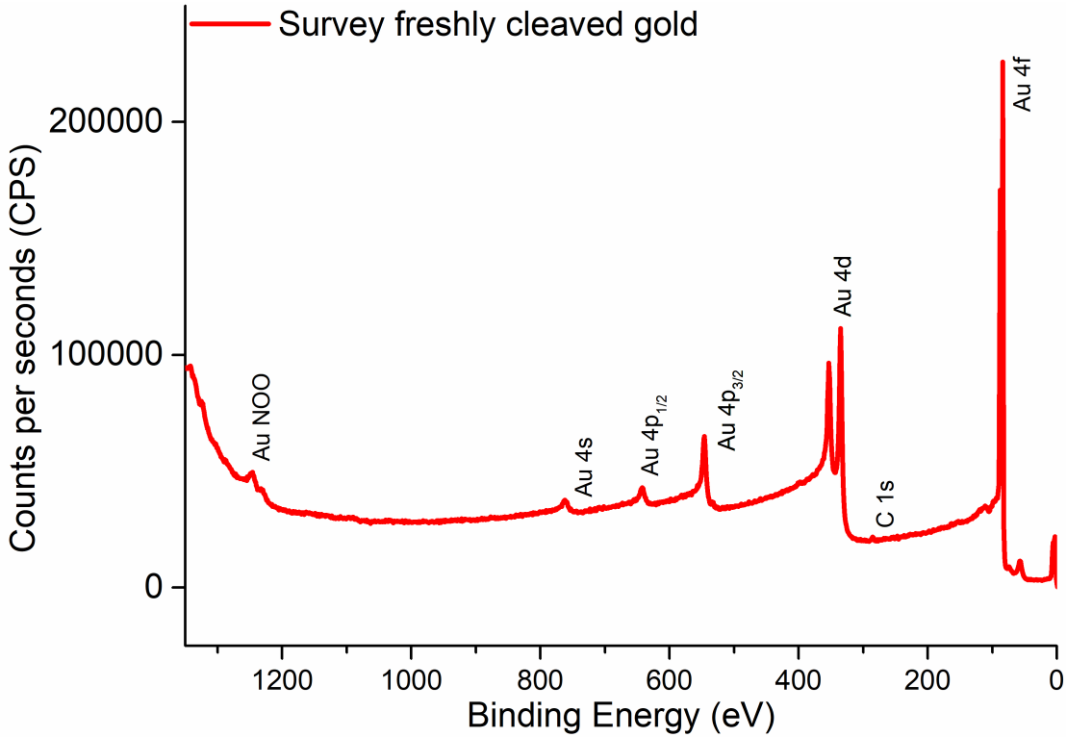

Figure S2 Example of survey spectrum of freshly cleaved gold sample

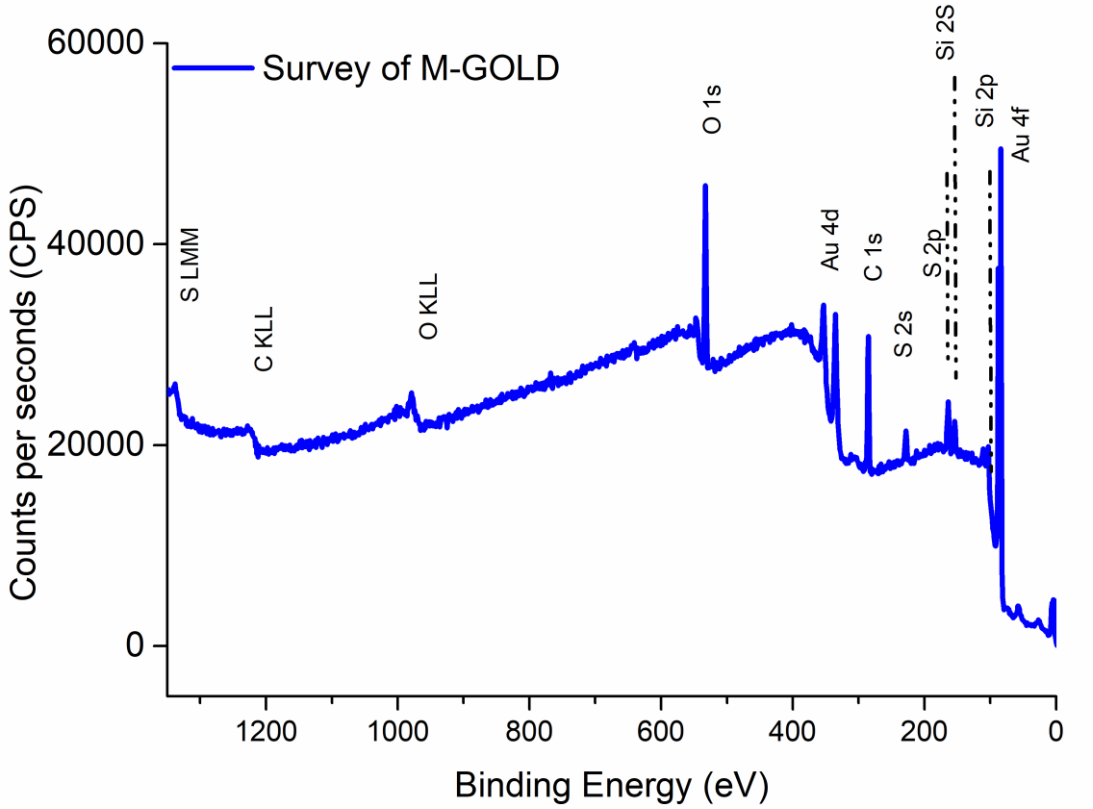

Figure S3 Example of survey spectrum of M-gold sample

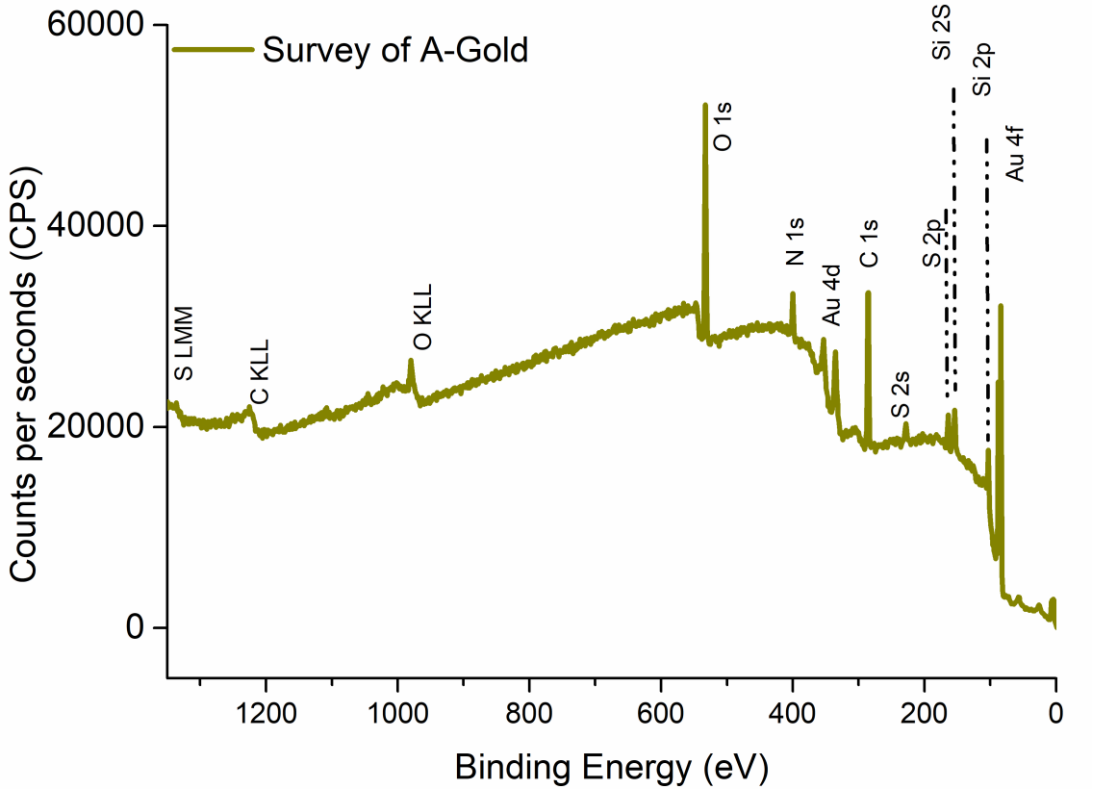

Figure S4 Example of survey spectrum of A-gold sample

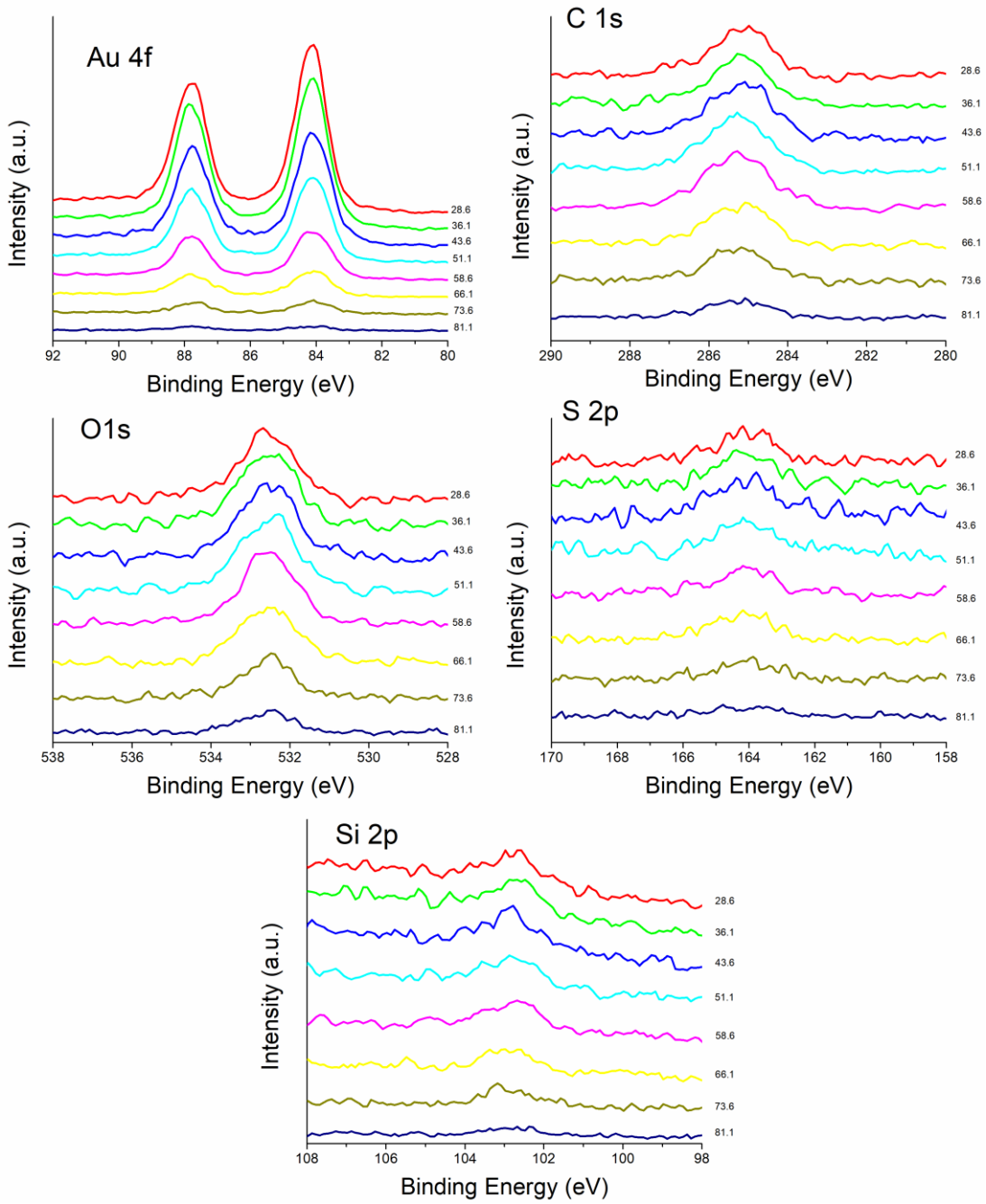

Figure S5 Angle-resolved high-resolution spectra of the Au 4f, C 1s, O 1s, S 2p and Si 2p of M-gold samples.

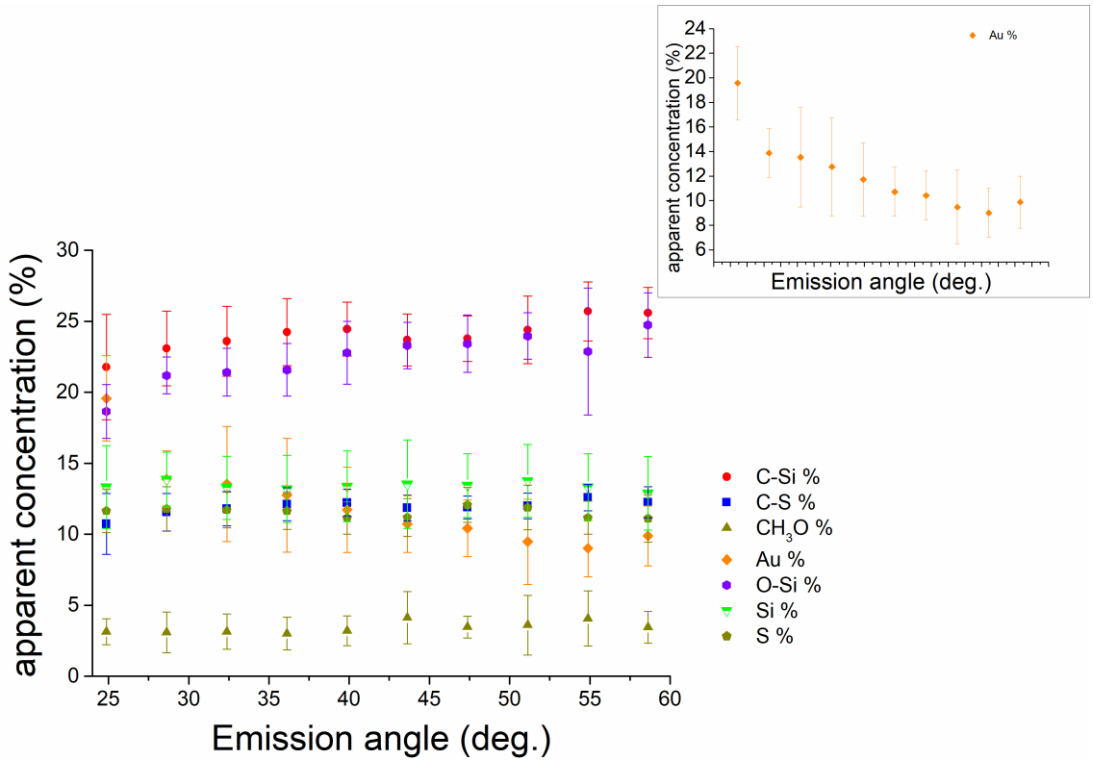

Figure S6 Apparent concentration (%) versus emission angle (a) and relative depth plot (b) for M-gold. (Inset: apparent concentration of gold (at%) versus emission angle) .

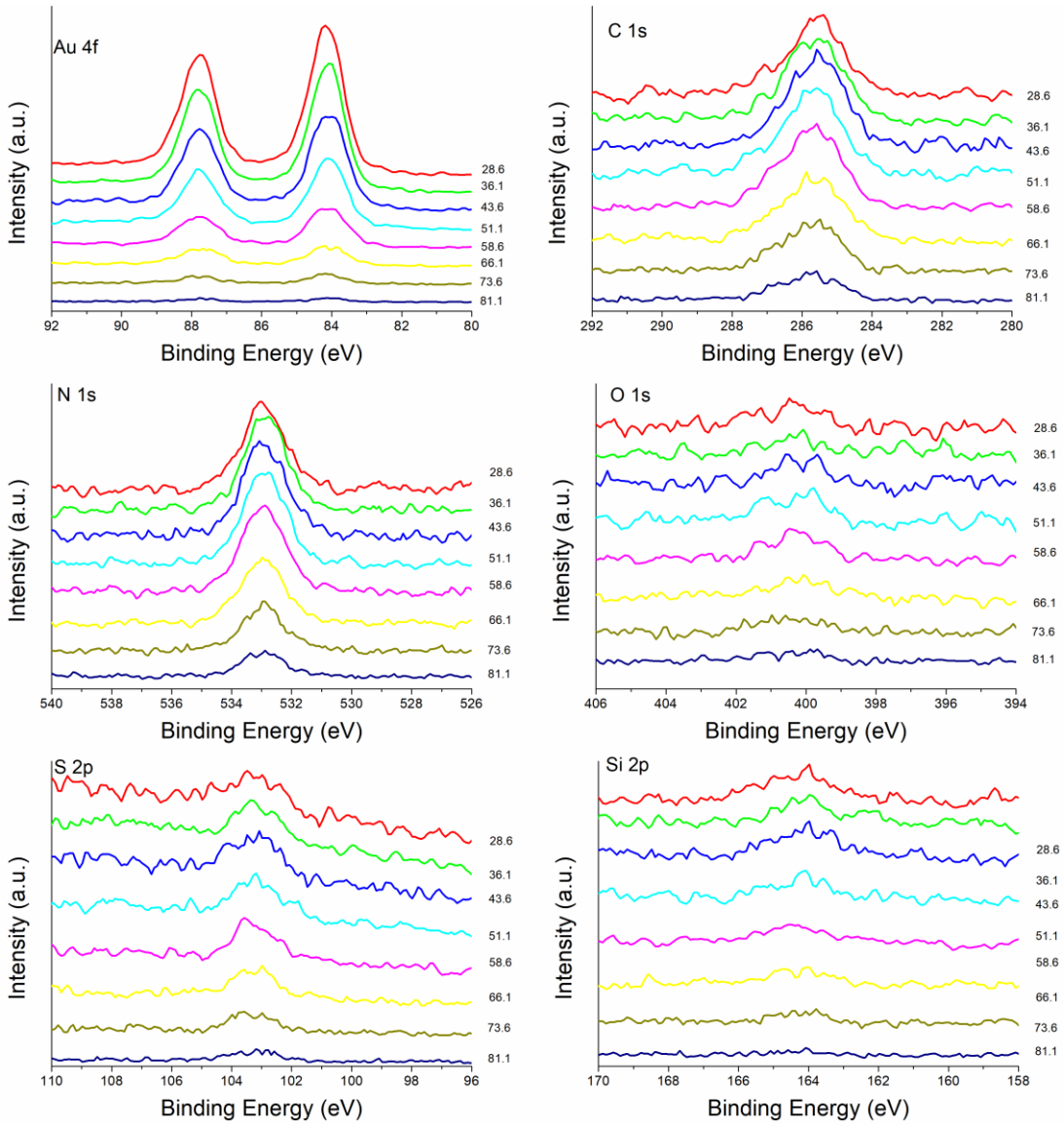

Figure S7 1Angle-resolved high-resolution spectra of the Au 4f, C 1s, O 1s, S 2p and Si 2p of A-gold samples

31. Scofield, J.H. Hartree-Slater Subshell Photoionization Cross-Sections at 1254 and 1487 eV. *Journal of Electron Spectroscopy and Related Phenomena* **1976**, *8*, 129–137, doi:10.1016/0368-2048(76)80015-1.