

Electronic Supplementary Information

The formation of heterointerface defects in Au/Cu films on Si substrates under direct current in a vacuum ultraviolet environment

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Fig. S1. The AES depth profile of the sample in Cu films which were connected with the positive electrode: (a) as-deposited; (b) under DC (CV mode) in a vacuum UV environment for 60 minutes.

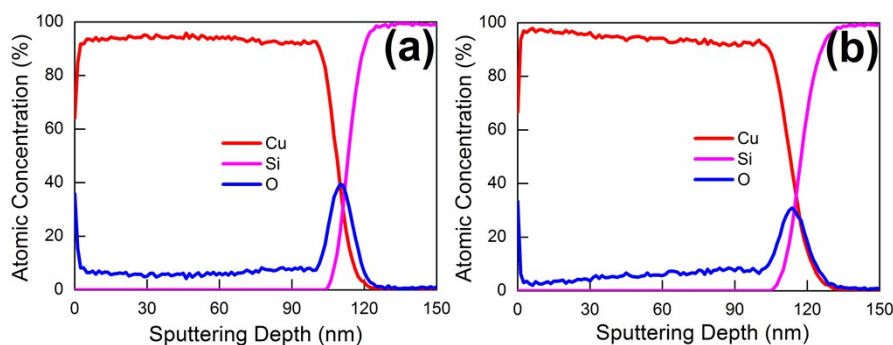


Fig. S2. The AES depth profile of the sample at the heterointerface in Au/Cu film deposited on Si substrate: (b) under DC in a vacuum UV environment for 60 minutes; (c) for 180 minutes.

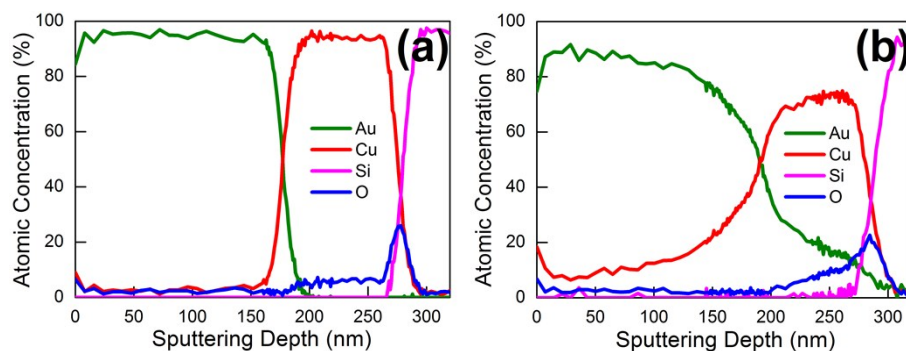


Table S1 Crystallographic data for compounds and polymorphs of the Au-Cu system.

Chemistry		Crystallochemical parameters					
Composition	Au :Cu	Polymorph/ symmetry	Space group	Atoms per unit cell (\AA^3)	No. of formula weights per unit cell, Z	Molar volume, V_m ($10^{-6} \text{m}^3 \text{mol}^{-1}$)	JCPDS Card No.
Au		Cubic	$Fm-3m$	67.85	4	10.21	04-0784
Cu		Cubic	$Fm-3m$	47.24	4	7.11	04-0836
AuCu	1	Orthorhombic	$Pbam$	114.10	4	17.18	38-0741
		Trigonal	$P4/mmm$	57.55	2	17.33	25-1220
		Orthorhombic	$Imam$	576.11	20	17.35	27-0156
		Cubic	$Fm-3m$	58.05	2	17.48	65-8608
AuCu ₃	0.33	Cubic	$P-43m$	52.65	1	31.71	89-2049
		Cubic	$Pm-3m$	52.7	1	31.74	35-1357
Au ₃ Cu	3	Cubic	$Pm-3m$	68.30	1	41.13	34-1302
Au ₂ Cu ₃	0.67	Orthorhombic	$Pmmm$	611.03	8.8	41.81	27-0157

Fig. S3. THE Cu LMM Auger lines in the Au/Cu films with treatment time under DC in a vacuum UV environment: (a) 80 nm (in the Au layer); (b) 180 nm (at the Au/Cu interface); (c) 260 nm (in the Cu layer); (d) 280 nm (at the Cu/Si interface).