

Materials List for:

Use of Sacrificial Nanoparticles to Remove the Effects of Shot-noise in Contact Holes Fabricated by E-beam Lithography

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Materials

Name	Company	Catalog Number	Comments
AATMS (95%)	Gelest Inc.	SIA0595.0	N-(2-aminoethyl)-11-aminoundecyltrimethoxysilane
Gold colloids (Ted Pella Inc.)	Ted Pella	15705-20	Gold Nanoparticles
hydrogen peroxide	Fisher Scientific	H325-100	Analytical grade (Used to clean wafer)
hydrochloric acid	Fisher Scientific	S25358	Analytical grade
Ammonium hydroxide	Fisher Scientific	A669S-500SDS	Analytical grade (Used to clean wafer)
hydrogen fluoride	Fisher Scientific	AC277250250	Analytical grade(used to etch SiO ₂)
Toluene (anhydrous, 99.8%)	Sigma Aldrich	244511	Analytical grade (solvent used in Self Assembly of AATMS)
Isopropyl alcohol (IPA)	Sigma Aldrich	W292907	Analytical grade (Used to make developer)
Methyl butyl ketone (MIBK)	Sigma Aldrich	29261	Analytical grade(used to make developer)
1:3 MIBK:IPA developer	Sigma Aldrich		Analytical grade (Developer)
950 k poly(methyl methacrylate (PMMA, 4% in Anisole)	Sigma Aldrich	182265	Photoresist for E-beam lithography
Purified Water : Barnstead Sybron Corporation water purification Unit, resistivity of 19.0 MΩcm			Water for substrate cleaning
Gaertner ellipsometer	Gaertner		Resist and SAM thickness measurements
XPS, ThermoScientific ESCALAB 250 instrument	Thermo-Scientific		Surface composition
An FEI Siron XL30	Fei Corporation		Characterize nanopatterns
Zeiss sigma VP FEG SEM	Zeiss Corporation		E-beam exposure and patterning
MDS 100 CCD camera	Kodak		Imaging drop shapes for contact angle measurements
Tegal Plasmod	Tegal		Oxygen plasma to etch photoresist
I ₂	Sigma Aldrich	451045	Components for gold etch solution
KI	Sigma Aldrich	746428	Components for gold etch solution
Ellipsometer (LSE Stokes model L116A)	Gaertner	L116A	AATMS self assembled monolayer film thickness measurements