

Medusa 84 SiH presentation materials

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產品簡介:

SX AR-N 8400系列, 實驗代號Medusa 84 SiH, 為氫倍半矽氧烷類(HSQ - Hydrogen silsesquioxane)負型電子束微影阻劑。與傳統HSQ相較, Medusa 84 SiH產品穩定性佳, 有效期限較長, 製程穩定等優點。產品系列目前有:

Properties	unit	Medusa 84 SiH grade	
		SX AR-N 8400.04	SX AR-N 8400.08
Solid Content (固型份)	nm	4	8
Film thickness@4000rpm	nm	50	100
Flash point (閃火點)	°C	< 35	
Storage temperature ¹	°C	8 - 12	

SX	AR-N	8400	.08	產品編碼說明
				固形份 % 08= 8 %
				產品編碼
				阻劑類型 P: 正型 N: 負型
				公司編碼
				客製或開發中產品

Remark : The product have a guaranteed shelf life of 3 months from the date of sale if stored as directed and can also be used without guarantee until the label date.

Note: Deep-freeze storage extends the shelf life.

有效期限: 3個月。(自產品銷售日算起)

在無正式的保證情況下, 產品可使用至標籤上的到期日。

冷凍儲存的條件可延長使用期限。

產品包裝:

30 ml / 瓶 250 ml / 瓶

100 ml / 瓶 1 L/瓶

其它包裝可依客戶需求增加

出貨:

✓ 4 – 8 週 : 德國運出

✗ 1週 : 國內庫存

(此品項目前暫無國內庫存)



價格詢
問



其它諮
詢



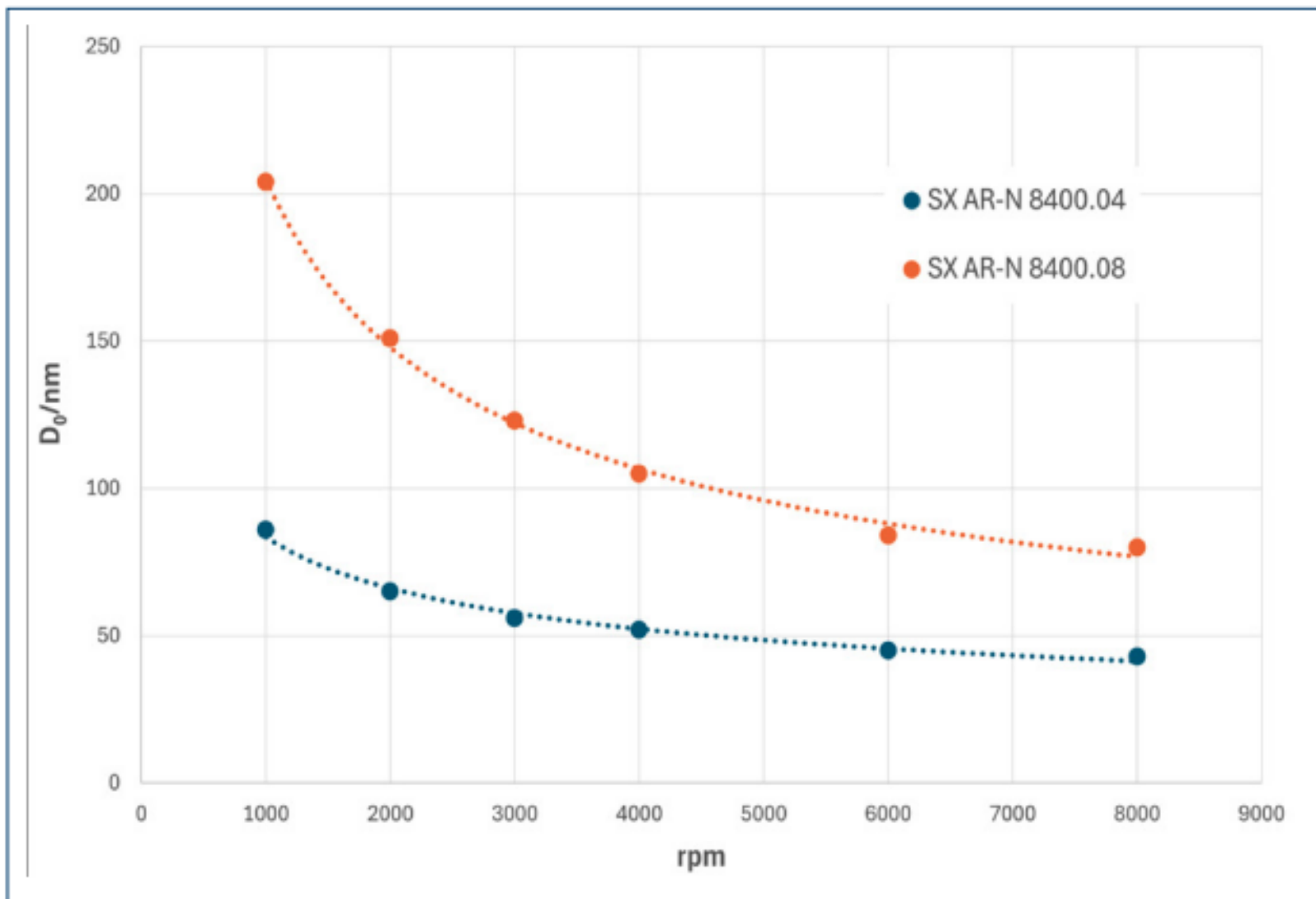
產品GHS標識

Characterization

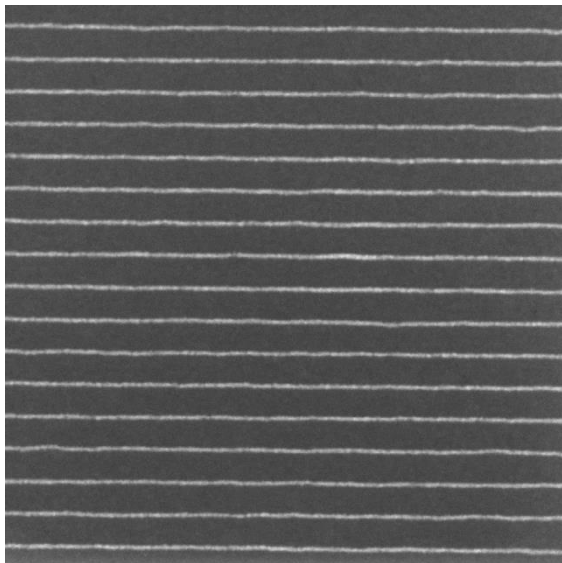
- Hydrogen silsesquioxane dissolved in butyl acetate
主要成份為氫基倍半矽氧烷溶於醋酸正丁酯
- High resolution e-beam resist
高解析度電子束微影阻劑
- Improved shelf life, as butyl acetate reduces gelling and particle formation
使用醋酸正丁酯為溶劑以減少結塊及顆粒的形成，有效的改善有效期限
- Improved stability due to the addition of stabilizer molecules
添加穩定劑使產品更形穩定
- Elimination of the presumably carcinogenic solvent MIBK (methyl isobutyl ketone)
不使用可能致癌的甲基異丁酮(MIBK)溶劑

Properties I			
Parameter		SX AR-N 8400.04	SX AR-N 8400.08
Solids content 固型份	%	4.0	8.0
Film thickness@4000 rpm膜厚	nm	50	100
Flash point 閃火點	°C	< 35	
Storage temperature 儲存溫度	°C	8 - 12	
Property II			
Glass transition temperature	°C	- -	
Dielectric constant		3.0	
Cauchy coefficients	N ₀	1.409	
	N ₁	46	
	N ₂	0	
Plasma etching rates 1 Pa, 100 V Bias	nm/min	Ar	34
		SF ₆	146
		CF ₄	175
		CF ₄ + O ₂	82
		O ₂	5.5
		Cl ₂	64

SX AR-N 8400 series spin curve



Structure resolution



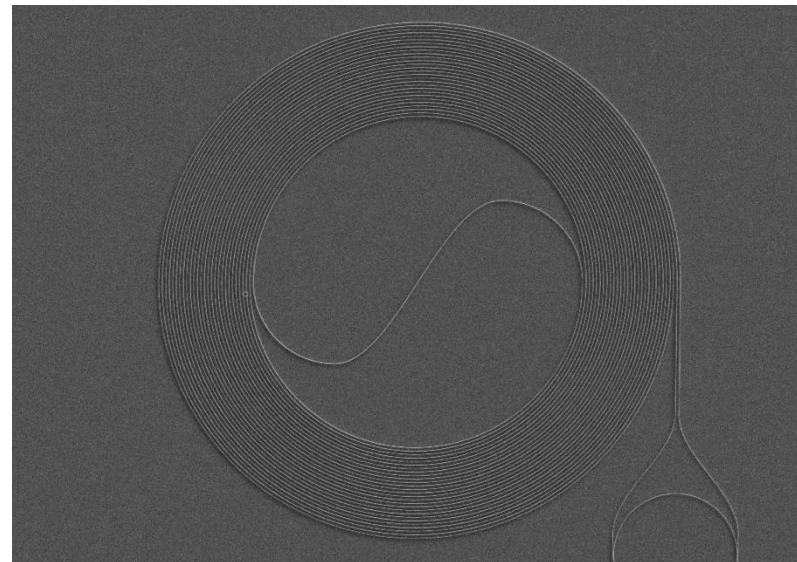
6 nm lines developed with 1% KOH. The wafer was stored in vacuum for 10 days between coating and lithography and showed no loss of processability or degradation.

© Raith Dortmund

Process parameters

Substrate	Si 4" wafer
Soft-bake	90 °C x 1 min, hot plate
Exposure	Raith Pioneer 30 KV
Development	AR 300-73 x 60-90 sec, 23 °C

Resist structures



100 nm line/space structures written on silicon at 1000 $\mu\text{C}/\text{cm}^2$ @ 100 kV and developed with AR 300-73 (6.5% TMAH solution).

© J. Hohmann, KIT-IMT Karlsruhe

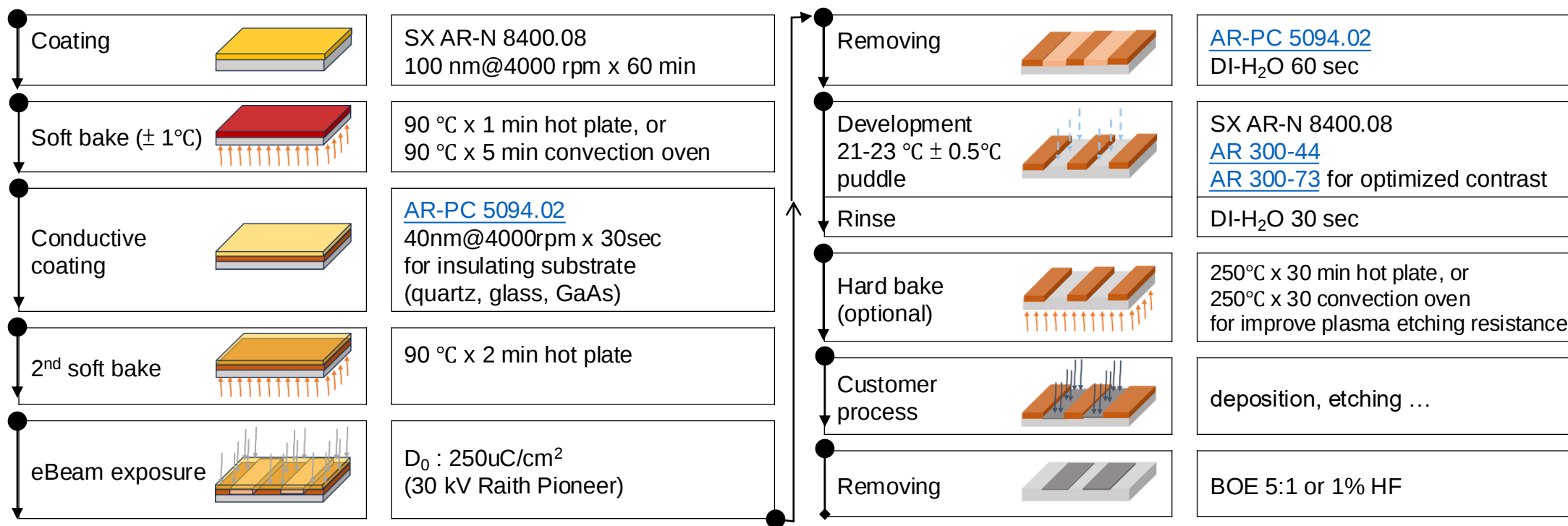
Process chemicals

Adhesion promoter	AR 300-80 new
Developer	AR 300-44 / AR 300-73
Thinner	Butyl acetate VLSI-grade
Stopper / Remover	DI-H ₂ O / BOE or 1% HF

Process conditions

This diagram shows exemplary process steps for the resist series SX AR-N 8400. All specifications are guideline values which must be adapted to own specific conditions. For further information on processing „Detailed instructions for optimum processing of photoresists“. For recommendations on wastewater treatment and general safety instructions „General product information on Allresist photoresists“.

圖示 SX AR-N 8400 series 阻劑產品製程參數的範例。所有參數為參考值,使用者應依設備環境實際狀況加以調整



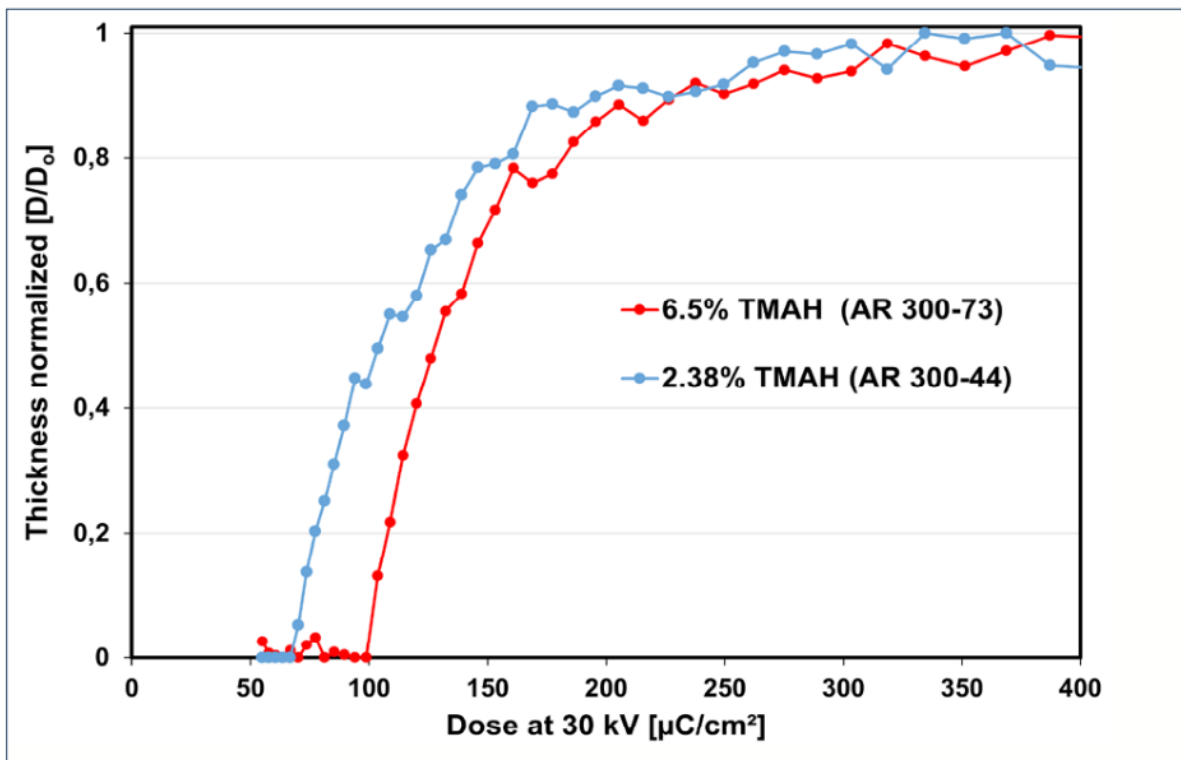
Note on stability: Coated substrates can be stored under normal conditions and processed without loss of sensitivity or resolution even after several days. The use of vacuum or inert gas is not necessary.

穩定性: 已塗佈阻劑之基板在正常情況下仍可維持其敏感度或解析度至數日。(無需置於真空或鈍氣環境)。

Contrast curve

Contrast curves of Medusa 84 SiH with a dwell time of 3 days between irradiation and development. Developing with a higher TMAH concentration leads to improved contrast with only a slightly higher dose.

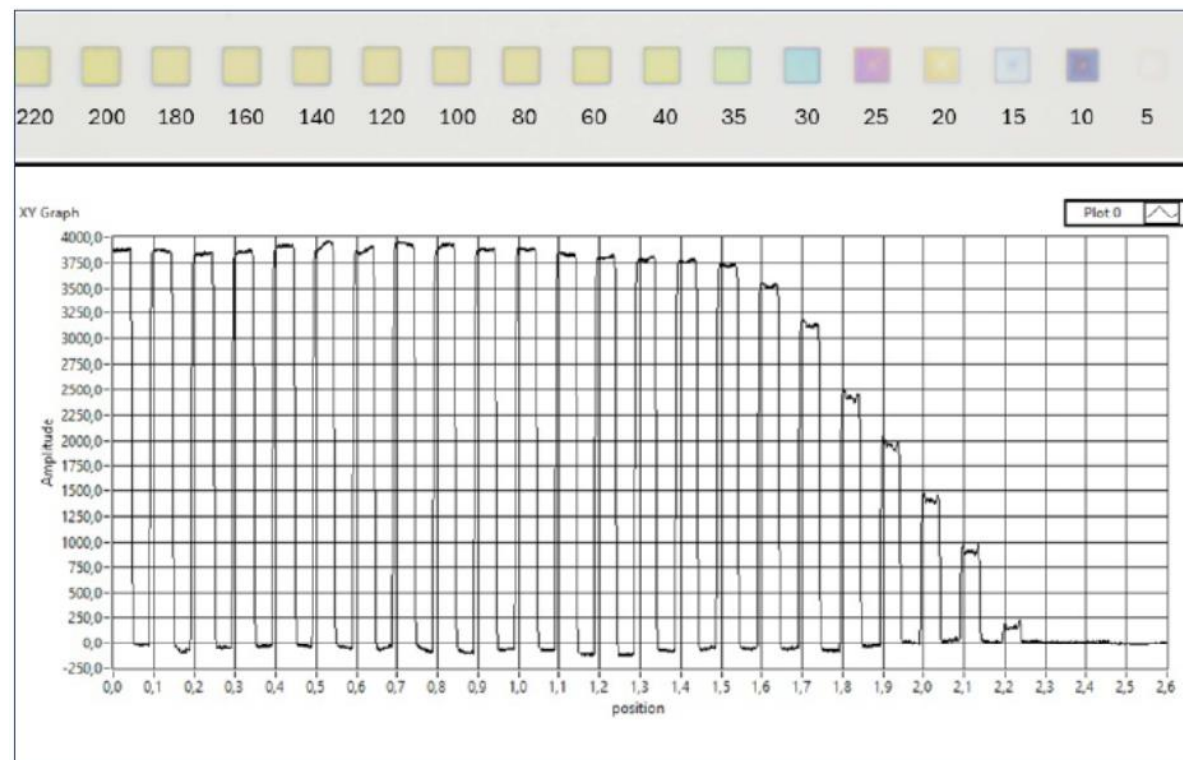
Medusa 84 SiH曝光後靜置3天再進行顯影，以較高濃度TMAH顯影劑僅需些微調整曝光劑量。



Grey tone application

Grey scale structures written on silicon with 30 kV. The top row shows the squares with the dose used in $\mu\text{C}/\text{cm}^2$. The stylus profilometer shows the remaining height in Å after development with 2.38 % TMAH. © Zsuzsanna Márton, ELI-ALPS Hungary

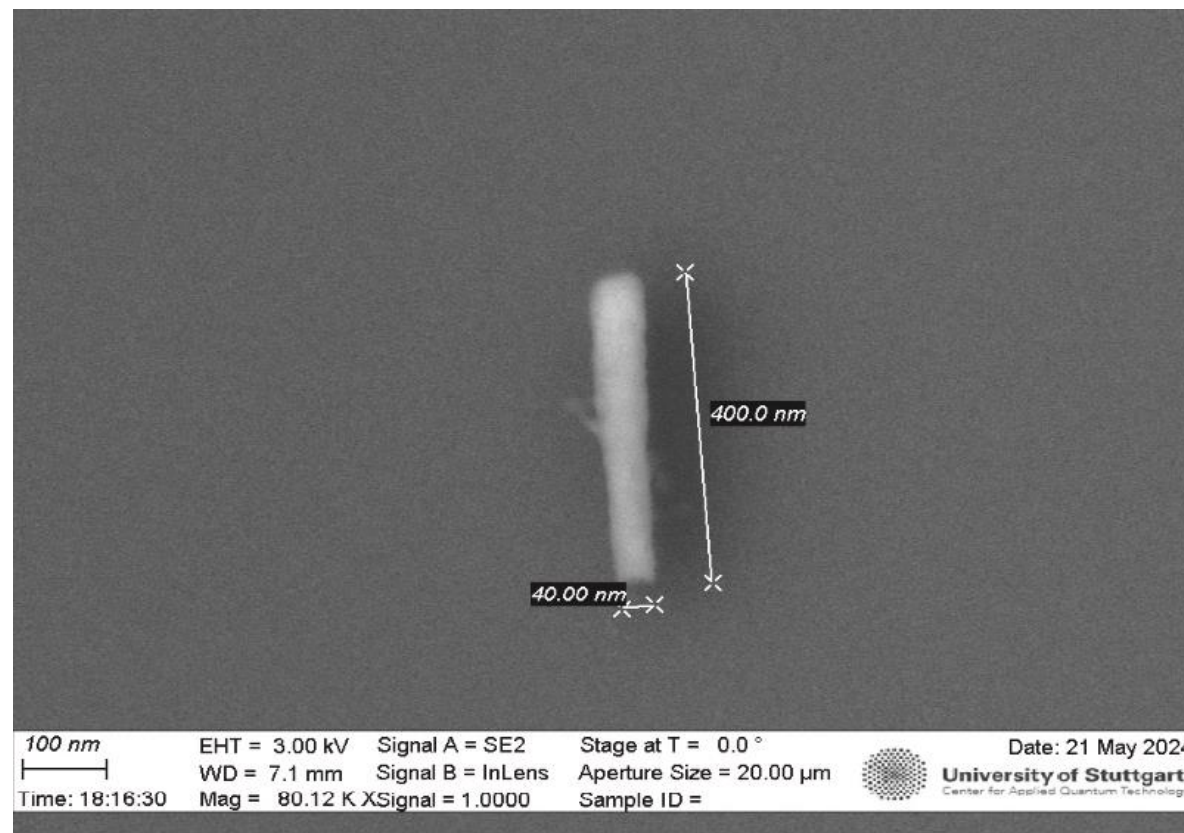
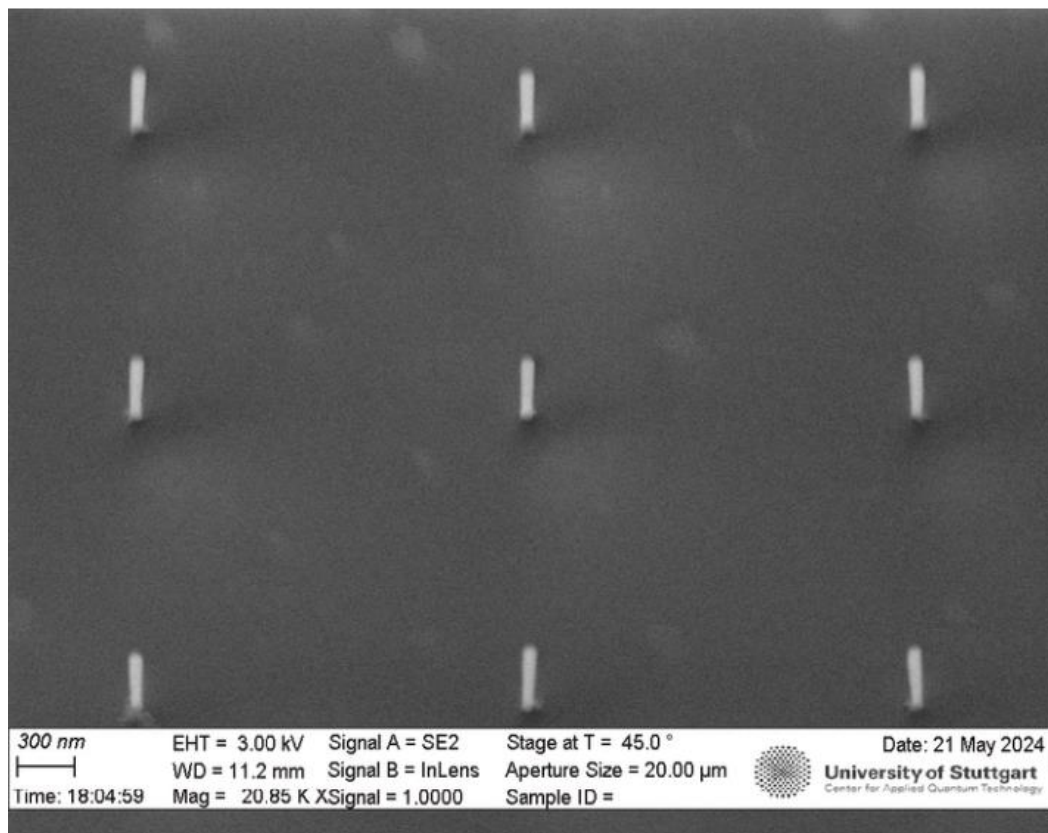
於Si基板上以30kV與2.38% TMAH寫出的灰階結構。下圖上方顯示正方形結構與對應的曝光劑量。圖下方顯示其對應的殘餘厚度。



Structures with a high aspect ratio 高深寬比結構範例

Left/ right : Nanorods with a spacing of 1 μm written on silicon at 2000 $\mu\text{C}/\text{cm}^2$ @ 50kV and developed with AR 300-44 (2.38% TMAH). Aspect ratios of up to 10 were achieved. © R. Stöhr, ZAQuant Univ. Stuttgart

下圖範例為高深寬比(10)：於矽基板以劑量2000 $\mu\text{C}/\text{cm}^2$ @ 50kV · AR 300-44 (2.38% TMAH)寫出(L: 400nm/W: 40nm)間距為1 μm 的奈米棒。



AR-PC 5094.02 導電塗層搭配範例

Siemens star written on quartz with the new conductive coating Electra 92 ([AR-PC 5094.02](#)) spun on to prevent charge build-up. This variant of Electra 92, specially developed for HSQ, has excellent coating and adhesion properties.

© B. Drent, AMOLF NanoLab Amsterdam

Electra 92 ([AR-PC 5094.02](#))為新版導電塗層，對HSQ有良好塗佈特性及黏著度。

下圖為Medusa 84 SiH搭配新版Electra 92於石英基板寫出西門子星標的範例。

