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Introduction of ZEP-series

ZEON

ZEON CORPORATION

Specialty Materials Division

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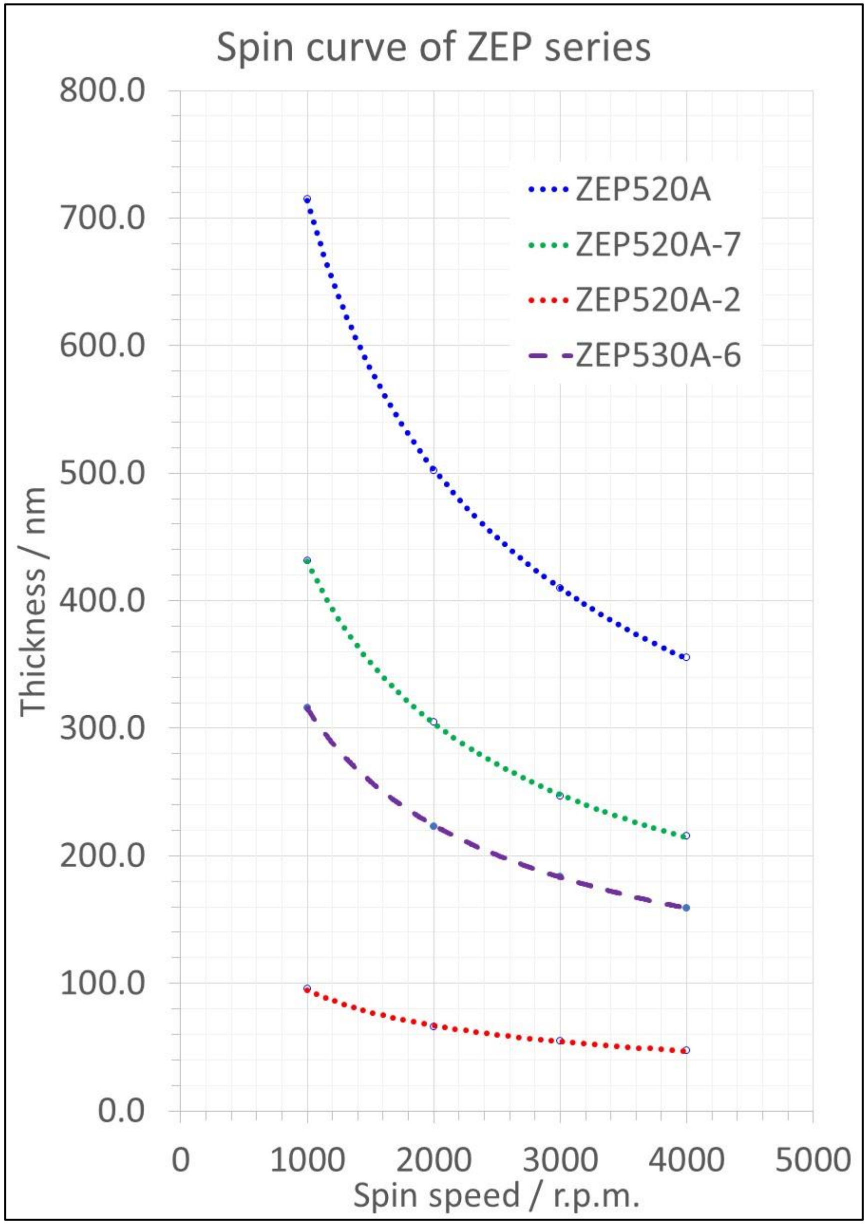
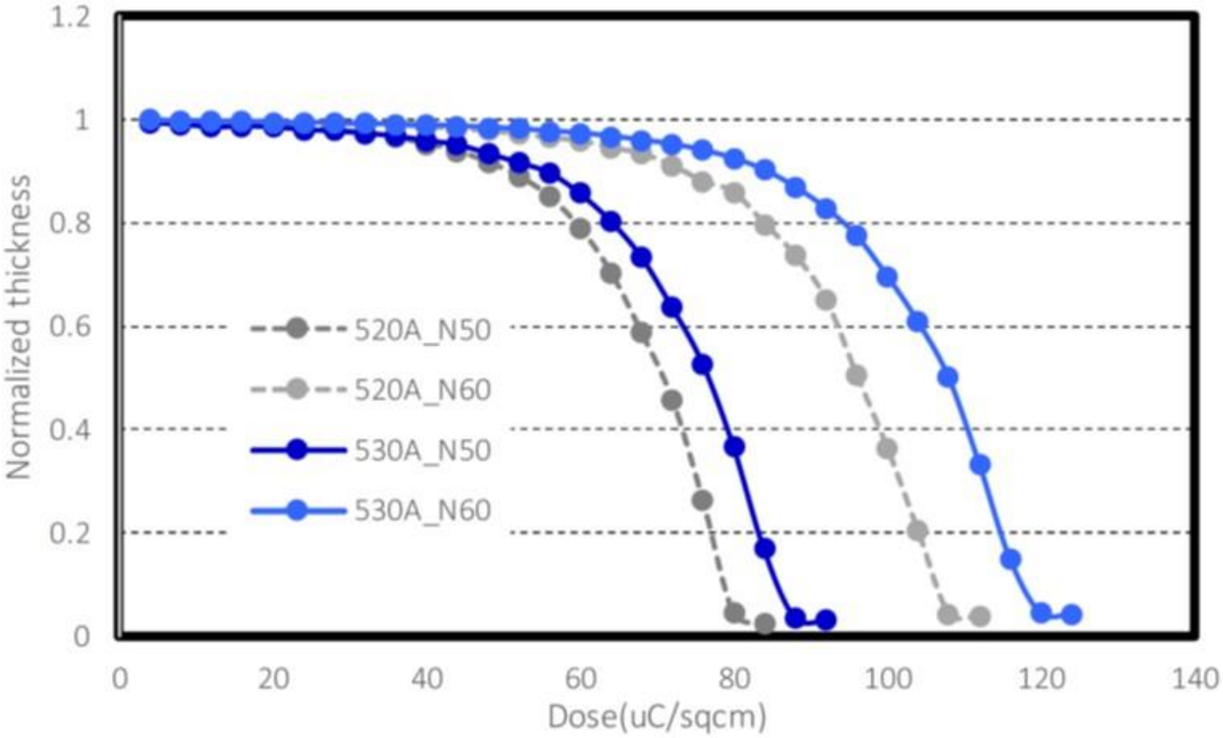
Spin Curve of ZEP series



【 Dilution Rate 】
- ZEP520A : Dilution Rate 1.0
- ZEP520A-7 : Dilution Rate 1.3
- ZEP520A-2 : Dilution Rate 4.4

Dilution Rate
={Original Resist(g)+Solvent(g)}/original Resist(g)
(Weight Ratio)

Contrast Curve (ZEP520A, ZEP530A)



Resist	Developer	Eth	γ
520A	N50	81.4	8.1
	N60	108.3	10.0
530A	N50	87.6	8.5
	N60	119.4	11.0

Develop	NXX	Dip	60sec
Rinse	IPA	Dip	10sec

FT: 500 nm

ZEP530A: Lower sensitivity, but higher γ-value

ZED-N60: Newest developer

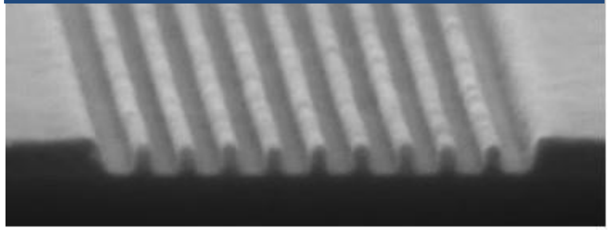
Standard conditions for ZEP patterning

Process	Condition
Resists	ZEP520A and ZEP530A
Coating	Spinner 300rpm/3sec. X rpm/57sec. FT40nm or 50nm
Prebaking	180 deg C, 3 min., Hot Plate
EB irradiation	Equipment : ELS-S50 (ELIONIX CORPORATION) Drawing Field : 100 um X 100 um (50,000 dot X 50,000 dot) Beam Current : 20 pA Accelerating Voltage : 50 kV
Development	Developer : ZED-N50, ZED-N60, etc. Dipping, 23 deg C, 60 sec.
Rinse	Rinse Agent : IPA (Isopropyl Alcohol) Dipping, 23 deg C, 30 sec.

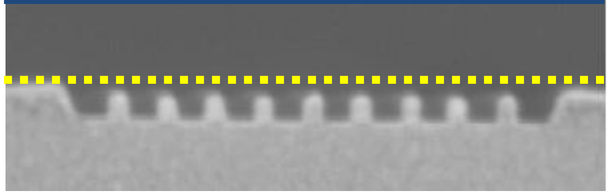
Comparison of Pattern Shape at Optimal Exposure Dose

ZEP520A_ZED-N50 140uC/sqc

Pattern damage

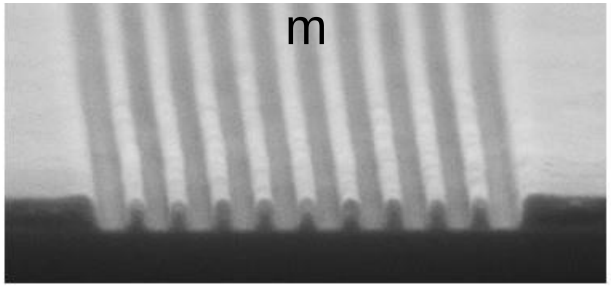


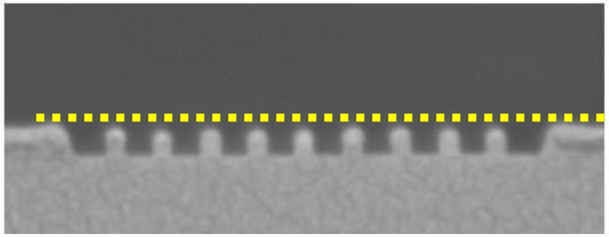
Large pattern thickness consumption



ZEP530A_ZED-N50

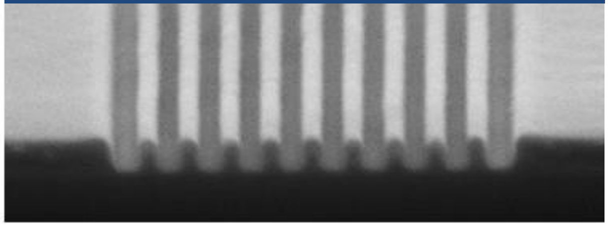
150uC/sqcm





ZEP530A_ZED-N60 190uC/sqc

No pattern damage



No pattern thickness consumption

hp 25nm @FT50nm

Patterning hp20nm with developer N50

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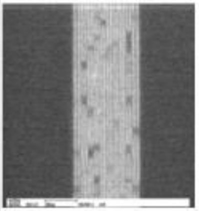
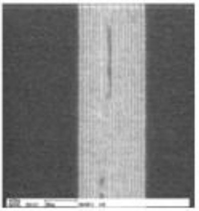
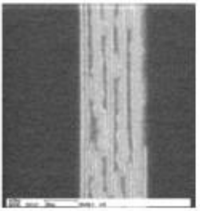
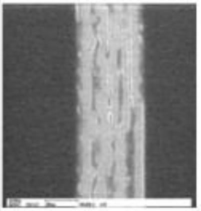
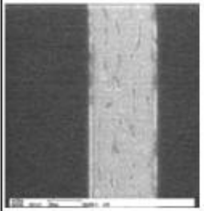
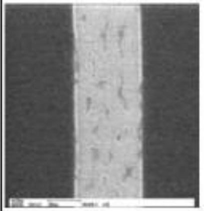
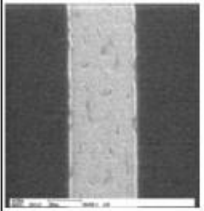
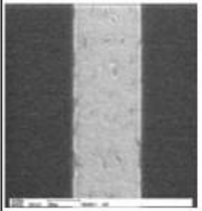
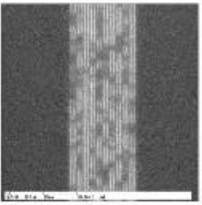
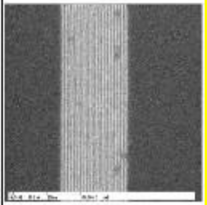
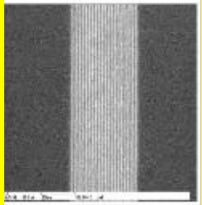
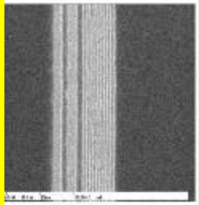
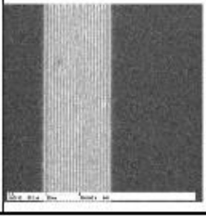
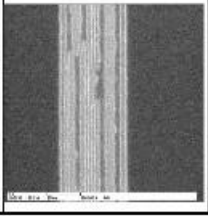
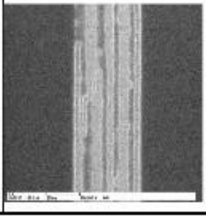
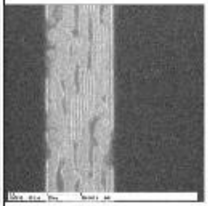
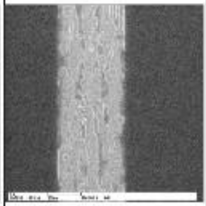
Resist	Dose(uC/sqcm)								
	120	130	140	150	160	170	180	190	200
ZEP-520A									
ZEP-530A									

ZEP530A: Higher resolution

Patterning hp20nm with developer N60

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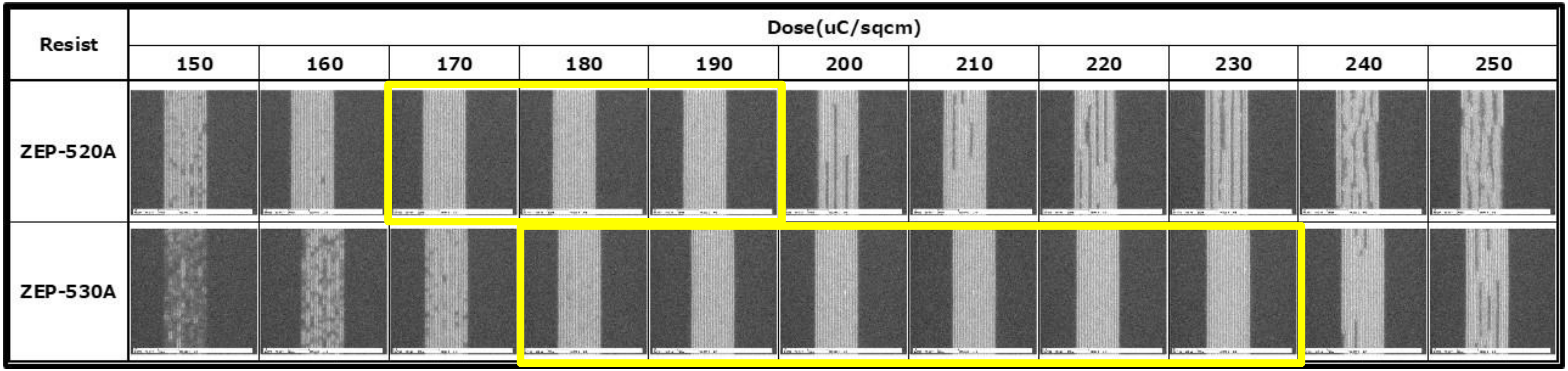

ZEP530A: Wider dose latitude