

■ X-ray Fresnel Zone Plate (FZP)

Product Name	Model	Membrane Material	Membrane thickness (μm)	Outermost zone pattern Width (nm)	Diameter (μm)	Number of zone	Ta thickness (nm)
Ta based Fresnel Zone Plate	ATN/FZP-S50/80	SiN	0.2	50	80	400	250
	ATN/FZP-S40/155	SiN	2	40	155	968	200
	ATN/FZP-S40/400	SiN	0.2	40	400	2500	200
	ATN/FZP-S50/330	SiN	1	50	330	1650	400
	ATN/FZP-S86/416	SiN	2	86	416	1200	700
	ATN/FZP-100/155	SiN	2	100	155	388	800
	ATN/FZP-116/3000	SiN	2	116	3000	6497	900
	ATN/FZP-173/208	SiN	2	173	208	300	1000
	ATN/FZP-200/206	SiN	2	200	206	255	1600
	ATN/FZP-C234/2500	SiC	0.2	234	2500	2670	150

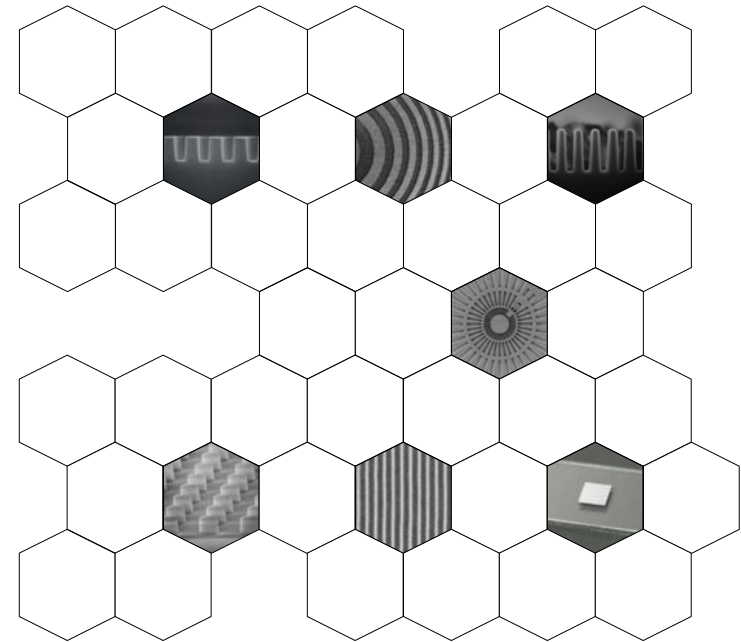
■ X-ray Chart

Product Name	Model	Minimum pattern size	Pattern	Substrate and Membrane
X-ray chart (Standard type)	ATN/XRESO-200	200nm	Type: Slit Absorber: Ta, 1μmt Patterned area: 250μm x 300μm	Substrate: Si, 8mmx8mm, 625μmt Membrane: SiN2μm Membrane size: 1mmx1mm
X-ray chart (High resolution type)	ATN/XRESO-50	50nm	Type: Radial pattern, L&S, Hole Absorber: Ta, 200nm thickness Patterned area: 300μm x 300μm	Substrate: Si, 10mmX10mm, 1mmt Membrane: Ru20nm / SiN200nm Membrane size: 1mmx1mm
X-ray chart (High resolution type with thicker film)	ATN/XRESO-50HC	50nm	Type: Radial pattern, L&S, Hole Absorber: Ta, 500nm thickness Patterned area: 300μm x 300μm	Substrate: Si, 10mmX10mm, 1mmt Membrane: Ru20nm / SiC200nm/SiN50nm Membrane size: 1mmx1mm

■ SiC, SiN Membrane Chip

Product Name	Model	Membrane material	Chip size (mm)	Membrane size (mm)	Membrane thickness (nm)	Chip Thickness (μm)
SiN Membrane	ATN/MEM-N03001/7.5M	SiN	7.5 × 7.5	3 × 3	100	625
	ATN/MEM-N02001/10M	SiN	10 × 10	2 × 2	100	625
	ATN/MEM-N03002/7.5M	SiN	7.5 × 7.5	3 × 3	200	625
	ATN/MEM-N03002/10M	SiN	10 × 10	3 × 3	200	625
	ATN/MEM-N020027/10M	SiN	10 × 10	2 × 2	270	625
	ATN/MEM-N0302/10M	SiN	10 × 10	3 × 3	2000	625
	ATN/MEM-N0301/10M	SiN	10 × 10	3 × 3	1000	625
SiC Membrane	ATN/MEM-C02003/10M	SiC	10 × 10	2 × 2	300	625
	ATN/MEM-C03003/10M	SiC	10 × 10	3 × 3	300	625
	ATN/MEM-C0301/10M	SiC	10 × 10	3 × 3	1000	625

Standard Products Lineups



- ▶ Mold/Template for Nanoimprinting
- ▶ Scale for metrology
 - ▶ X-ray optics
 - ▶ Membranes

NTT Advanced Technology Corporation

Note:
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■ Mold/Template for Nanoimprinting: Quartz, Si



Product Name	Model	Material	Type	Pattern Feature (Duty ratio)	Height/Depth	Other Remarks	
Standard Type	NIM-PH350	Quartz	Line □ Dot ▽ Hole ▢ Mix of the above patterns	Line: 350nm~10μm / 10 fields Hole, Dot: 500nm~10μm / 8 fields (1:1, 1:2, 1:5)	350nm	Substrate size: 10mmx10mm Thickness: 0.6mm Patterned area: 9mmx9mm	
	NIM-PH1000			All types: 1μm~10μm / 5 fields (1:1, 1:2, 1:5)	1μm		
	NIM-PH3000			All types: 3μm~10μm / 3 fields (1:1, 1:2, 1:5)	3μm		
High resolution type	NIM-80L RESO	Quartz	Line □	80nm~3μm / 11 fields (1:1, 1:2, 1:3, 1:10)	200nm	Substrate size: 10mmx10mm Thickness: 0.6mm Patterned area: 9mmx9mm	
	NIM-100L RESO ▽			100nm~3μm / 9 fields (1:1, 1:2, 1:3, 1:10)	200nm		
	NIM-100D RESO			100nm~3μm / 9 fields (1:1, 1:2, 1:3)	100nm		
	NIM-100H RESO			100nm~3μm / 9 field (1:1, 1:2, 1:3)	200nm		
	NIM-80L RESO(Si)	Si	Line □	80nm~3μm / 11 fields (1:1, 1:2, 1:3, 1:10)	200nm		
	NIM-100L RESO ▽(Si)			100nm~3μm / 9 fields (1:1, 1:2, 1:3, 1:10)	200nm		
	NIM-100D RESO(Si)			100nm~3μm / 9 fields (1:1, 1:2, 1:3)	100nm		
	NIM-100H RESO(Si)			100nm~3μm / 9 fields (1:1, 1:2, 1:3)	200nm		
Ultra fine pattern	NIM-50L/300	Si	Line ▽	50nm~500nm / 9 fields, (1:1)	300nm	Substrate size: 10mmx10mm Thickness: 0.5mm Patterned area: 2mmx2mm	
	NIM-50L/100				100nm		
Single type pattern	NIM-1000UL	Quartz	Line □	1,2,4,8μm / 4 fields, (1:1)	1μm	Substrate size: 20mmx20mm Thickness: 0.625mm Patterned area: 6mm x 4	
	NIM-100UL			Line □	100nm(1:1)		200nm
	NIM-100UH			Hole ▢	100nm(1:1), Square array		200nm
	NIM-100UD			Dot ▽	100nm(1:1), Square array		100nm
	NIM-150UL	Line □	150nm, 200nm(1:1)	200nm	Substrate size: 20mmx20mm Thickness: 1mm Patterned area: 8mm x 1 (excluding NIM-150UL) 8mm x 2 (NIM-150UL)		
	NIM-100UL(Si)	Si	Line □	100nm(1:1)		200nm	
	NIM-100UH(Si)			Hole ▢		100nm(1:1), Square array	200nm
	NIM-100UD(Si)			Dot ▽		100nm(1:1), Square array	100nm
	NIM-150UL(Si)			Line □		150nm, 200nm(1:1)	200nm

■ Templates for Nanoimprinting: Glassy Carbon (GC), Ni

Product Name	Model	Material	Type	Pattern Feature (Duty Ratio)	Height/Depth	Other Remarks
GC	NIM-100L RESO(GC)	GC*	Line □	100nm~3μm / 10 fields (1:1, 1:2, 1:3, 1:10)	200nm	Substrate size: 10mmx10mm Thickness: 2mm Patterned area: 9mmx9mm
	NIM-120D RESO(GC)		Dot ▽	120nm~3μm / 8 fields (1:1, 1:2, 1:3)	100nm	
Ni electro-formed	NIM-80L RESO(Ni)	Ni**	Line ▽	80nm~3μm / 11 fields (1:1, 1:2, 1:3, 1:10)	100nm	Substrate size: 10mm square Thickness: 0.3mm
	NIM-100L RESO(Ni)	Ni**	Line ▽	100nm~3μm / 9 fields (1:1, 1:2, 1:3, 1:10)	200nm	

* GC: Glassy Carbon **Ni: Nickel Electroformed

■ Measurement Scale

Product Name	Model	Attached document	Major Specifications Substrate material: Si, Substrate size: 10mmx10mmx0.525mm
Vertical type	AS100P-D	Measured data of representative chip	Application: Length correction, Probe shape evaluation Tilt angle: 90 degree Pattern type: 1:1 Line & Space Convex Line width: 50nm – 250nm, Pattern depth: 125nm ± 20% Patterned area: 200μm x 200μm
	AS100P-D(OP1)	Measured data of delivered chip	
	AS100P-D(OP2)	Measured data of representative chip and its cross-section image	
Tapered type	AS200P-A	Measured data of representative chip	Application: Angle correction, Tilt angle: 54.7 degrees Pattern type: 400nm, 200nm, 100nm Line & Space, 400nm grid Line width: 100nm – 400nm (convex) Pattern depth: 100nm – 200nm (as is) Patterned area: 184μm x 184μm x 4 different pattern fields

■ Step Height Scale

Product Name	Model	Step Height	Major Specifications
Step Height Scale	HS-05	0.05 μm	Patterned area: 100μm x 1mm x 3 lines Chip material: Si Chip thickness: 525μm Chip size: 10mm x 10mm Support substrate: 3mm thickness glass, 30mmx50mm
	HS-10	1 μm	
	HS-40	4 μm	

* NTT-AT also provides “custom-made” products to meet your needs, please feel free to contact us anytime/

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As of February, 2007

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