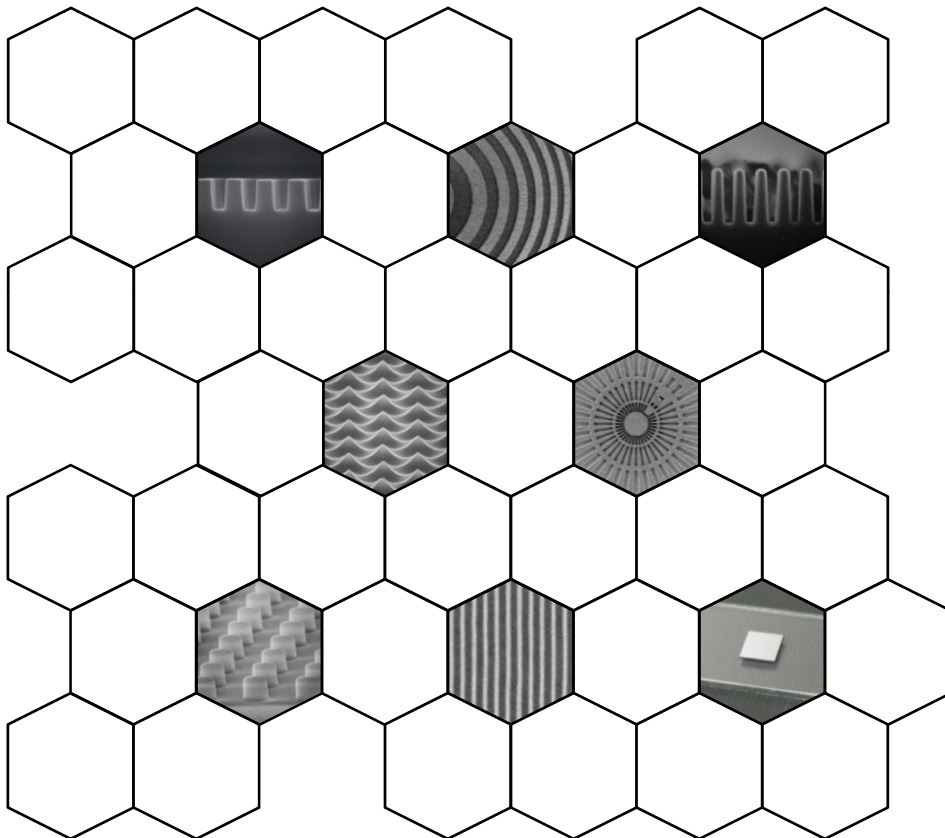


Standard off-the-shelf models



- ▶ **Molds for nanoimprint lithography**
- ▶ **Microlens array**
 - ▶ **Antireflection patterns (moth-eye structure)**
 - ▶ **Resolution chart for optical microscope**
 - ▶ **Scale / Membranes**
 - ▶ **X-ray optics**

* Custom-made specifications are also available

■ Molds for Nanoimprint Lithography

Product Name	Model	Material	Pattern type	Pattern size (Duty ratio)	Height (depth)	Other remarks
Standard Type	NIM-PH350	Quartz	Line☐ Dot☐ Hole☐ Mix of the above patterns	Line: 350nm~10μm / 10 fields Hoe, Dot: 500nm~10μm / 8 fields (1:1, 1:2, 1:5)	350nm	Substrate size: 10mm square Thickness: 0.625mm Patterned area: 9mm square
	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 / 11fields (1:1, 1:2, 1:3, 1:10)	200nm	Substrate size: 10mm square Thickness: 0.625mm Patterned area: 9mm square
	NIM-100L RESO☐		Line☐	100nm~3μm / 9 fields (1:1, 1:2, 1:3, 1:10)	200nm	
	NIM-100D RESO		Dot☐	100nm~3μm / 9 fields (1:1, 1:2, 1:3)	100nm	
	NIM-100H RESO		Hole☐	100nm~3μm / 9 fields (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)		Line☐	100nm~3μm / 9 fields (1:1, 1:2, 1:3, 1:10)	200nm	
	NIM-100D RESO(Si)		Dot☐	100nm~3μm / 9 fields (1:1, 1:2, 1:3)	100nm	
	NIM-100H RESO(Si)		Hole☐	100nm~3μm / 9 fields (1:1, 1:2, 1:3)	200nm	
Ultra fine type	NIM-50L/300	Si	Line☐	50nm~500nm / 9 fields, (1:1)	300nm	Substrate: 10mm square Thickness: 0.525mm Patterned area: 2mm square
	NIM-50L/100				100nm	
	NEW! NIM-25L/100				100nm	
Single type	NIM-1000UL	Quartz	Line☐	1, 2, 4, 8μm / 4 fields, (1:1)	1μm	Substrate:20mm square Thickness: 0.625mm Patterned area: 6mm square × 4 fields
	NIM-100UL		Line☐	100nm(1:1)	200nm	Substrate: 20mm square Thickness: 1mm Patterned area: 8mm square × 1 field (excluding -150UL)
	NIM-100UH		Hole☐	100nm(1:1), Square array	200nm	8mm square × 2 fields (-150UL)
	NIM-100UD		Dot☐	100nm(1:1), Square array	100nm	
	NIM-150UL	Line☐	150nm, 200nm(1:1)	200nm		
	NIM-100UL(Si)	Si	Line☐	100nm(1:1)	200nm	Substrate: 20mm square Thickness: 0.625mm Patterned area: 8mm square × 1 field (excluding -150UL)
	NIM-100UH(Si)		Hole☐	100nm(1:1), Square array	200nm	8mm square × 2 fields (-150UL)
	NIM-100UD(Si)		Dot☐	100nm(1:1), Square array	100nm	
	NIM-150UL(Si)		Line☐	150nm, 200nm(1:1)	200nm	
NEW! SiC type	NIM-100L RESO(SiC)	SiC*	Line☐	100nm~3μm / 9 fields (1:1, 1:2, 1:3, 1:10)	200nm	Substrate: 10mm square Thickness: 0.625mm Patterned area: 9mm square
	NIM-120D RESO(SiC)		Dot☐	120nm~3μm / 8 fields (1:1, 1:2, 1:3)	150nm	
GC type	NIM-100L RESO(GC)	GC**	Line☐	100nm~3μm / 9 fields (1:1, 1:2, 1:3, 1:10)	200nm	Substrate: 10mm square Thickness: 2mm Patterned area: 9mm square
	NIM-120D RESO(GC)		Dot☐	120nm~3μm / 8 fields (1:1, 1:2, 1:3)	150nm	
Ni electroforming type	NIM-80L RESO☐(Ni)	Ni***	Line☐	80nm~3μm / 11 fields (1:1, 1:2, 1:3, 1:10)	100nm	Substrate: 10mm square Thickness: 0.3mm
	NIM-100L RESO☐(Ni)		Line☐	100nm~3μm / 9 fields (1:1, 1:2, 1:3, 1:10)	200nm	Substrate:10mm square Thickness: 0.3mm

■ Mold for Nanoimprinting (microlens array, anti-reflection structure)

Product Name	Model	Material	Pattern type	Pattern pitch	Depth (sag height)	Patterned area	Other remarks
NEW! Microlens array	MLA-P20S08	Quartz	□ type Square array	20μm	8μm	10mm square	Substrate: 20mm square Thickness: 0.625mm
	MLA-P01S003			1μm	0.3μm	5mm square	Substrate: 15mm square Thickness: 0.625mm
NEW! Antireflection structure (moth-eye pattern)	MES-P270H350	Si	Circular cone nano array △ type Regular triangular structure	270nm	Height: 350nm	15mm square	Substrate: 4 inch diameter Thickness: 0.625mm

■ Resolution chart for optical microscope

Product Name	Model	Material / Thickness	Pattern type and size			Other remarks
NEW! Chart for optical microscope	ATN/OMRESO-100	Ta/200nm	L&S: 0.1~0.8μm / 5 fields	Siemens star: 0.1~4μm radial line patterns	Pin hole: 1~10μm / 4 fields	Substrate material: Quartz Thickness: 0.625mm Size: 10mm square

■ Measurement scale

Product Name	Model	Provided data	Specifications Substrate: Si, 10mm square, 0.525mm thickness			
Vertical type scale	AS100P-D	Measured data of representative chip	Application: Length calibration, probe profile evaluation Slope angle: 90 degrees Pattern type: 1:1 L&S △ type Line width: 50nm~250nm Pattern depth: 125nm±20% Patterned area: 200μm square			
	AS100P-D(OP1)	Measured data of delivered chip				
	AS100P-D(OP2)	Measured data of representative chip and cross-section				
Tapered type scale	AS200P-A	Measured data of representative chip	Application: Angle calibration Slope angle: 54.7 degree Pattern type: 400nm, 200nm, 100nm L&S, and 400nm grid Line width: 100nm~400nm (△ part) Pattern depth: 100nm~200nm (as is) Patterned area: 184μm square × 4 types			

■ Step height scale

Product Name	Model	Step height (nominal)	Step scale area	Chip specifications	Supporting substrate
Step height scale	HS-05	0.05μm	100μm × 1mm × 3 lines	Material: Si Chip size: 10mm square Thickness: 0.525mm	Material: Glass Substrate size: 30mm × 50mm Thickness: 3mm
	HS-10	1μm			
	HS-40	4μm			

■ SiC, SiN membrane

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

■ X-ray optics: (Ta based FZP, Center beam top for FZP, X-ray charts)

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

Product Name	Model	Pattern material	Pattern size	Pattern height	Membrane structure	Membrane size	Other remarks
NEW! Center beam top for FZP	ATN/CS – 100/30 - 1.5W	Au	100μmφ	30μm	SiC 2μm/ SiN 0.3μm	1.5mm□ *	Substrate • Si • 1mm thickness Chip size • 10mm square
	ATN/CS – 75/30 - 1.5W		75μmφ				
	ATN/CS – 50/30 - 1.5W		50μmφ				
	ATN/CS – 40/30 - 1.5W		40μmφ	50μm			
	ATN/CS – 100/50 - 1.5W		100μmφ				
	ATN/CS – 75/50 - 1.5W		75μmφ				

*3mm square membrane is also available

Product Name	Model	Pattern type	Minimum pattern size	Patterned area	Ta thickness	Membrane structure	Other remarks
X-ray chart (Standard)	ATN/XRESO-100	• Radial • L&S • Hole	100nm	250μm × 300μm	1.0μm	Ru 20nm/ SiN 2.0μm	Substrate • Si • 10mm square • 1mm thickness
X-ray chart (High resolution type)	ATN/XRESO-50		50nm	300μm × 300μm	200nm	Ru 20nm/ SiN 200nm	
X-ray chart (High resolution with thicker Ta layer)	ATN/XRESO-50HC		50nm	300μm × 300μm	500nm	Ru 20nm/ SiC 200nm/ SiN 50nm	Membrane size 1mm square

*The sale of ATN/XRESO-200 is ended

■ Transmission grating

Product Name	Model	Pattern type	Substrate and membrane
Transmission Grating	ATN/TG-200/11W	Structure: Stencil type (Ta/SiC) Grating pitch: 200nm Absorber: Ta 200nm thickness Strut: Pitch 2.5μm, Pitch: 2.5μm, Width: 0.5μm Area: 1mm square	Substrate: Si, 10mm x 10mm x 0.625mmt Membrane: SiC 300nm thickness Membrane size: 1mm square

*Remarks: Please kindly note that the specifications and numbers stated in this brochure are approximate values and not guaranteed. Also, the specifications may change without prior notice due to the updates.

For more information :

NTT Advanced Technology Corporation

International Business Division
TEL: 81 3 5843 0927
FAX: 81 3 5795 4150
E-mail: moreinfo@ntt-at.co.jp
URL: <http://www.ntt-at.com>