Technical Information of

WIR30-RI series

(UV curable acrylate polymers)

ChemOptics Inc.,

(www.chemoptics.co.kr)

Multi-mode waveguide resin (WIR30-RI)

ChemOptics

Description

The WIR30-RI series are photoactive UV curable resins based on fluorinated acrylate. In particular, they are very useful for optical multimode waveguide device applications such as 1 x N optical splitter and optical interconnections with UV embossing (Imprinting) technology. UV imprinting technology has good advantages for simple fabrication of optical waveguide devices due to the its photolithography and dry etching free process for waveguide patterning. These resins have low optical loss at near 830 and 1310 nm wavelengths, small birefringence, and excellent environmental stability. To obtain the best film quality, a nitrogen environment is recommended during the UV exposure time.

Features

- UV curing type
- Low optical loss
- Environmental stability
- Controllable refractive index
- Low shrinkage
- Solvent free
- Low viscose for UV embossing

Applications

- Optical planar light wave circuits
- Multimode optical devices
- Multimode splitter
- Optical interconnections
- Polymer optical bench
- Micro optical elements

Multi-mode waveguide resin (WIR30-RI)

ChemOptics

Performance specifications

Exguide™			WIR30-500	WIR30-480	WIR30-450
Liquide	Viscosity (cps @ 25℃)		100 ~ 180	150 ~ 240	160 ~ 250
	UV-exposure (under N_2)		> 2,500 mJ/cm^2		
			(160 ~ 200 ℃/30 min, post baking)		
Film	Propagation Loss† (dB/cm)	0.83 ㎛	< 0.05		
		1.31 ㎛	< 0.11		
		1.55 ㎛	< 0.42		
	Refractive Index @ 0.83 ㎛		1.50	1.48	1.45
	Birefringence ($n_{TE} - n_{TM}$)		0.001 ± 0.0005		
	Linear shrinkage (solid to solid)		< 5%		
	Glass Transition Temp. (Tg)		Not Detectable		
	Degradation Temp. (1 wt%)		310 ± 20℃		

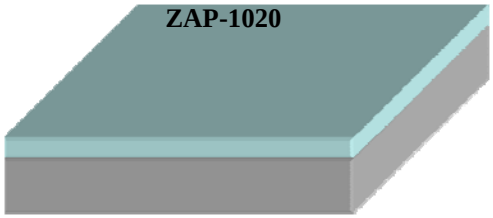
- † Measured from slab waveguide (prism coupling method)
- Refractive index can be precisely tunable from 1.45 to 1.50 by request.

Spin coating Fabrication Process of Waveguides

ChemOptics

Bare wafer (Si)

Adhesion promoter



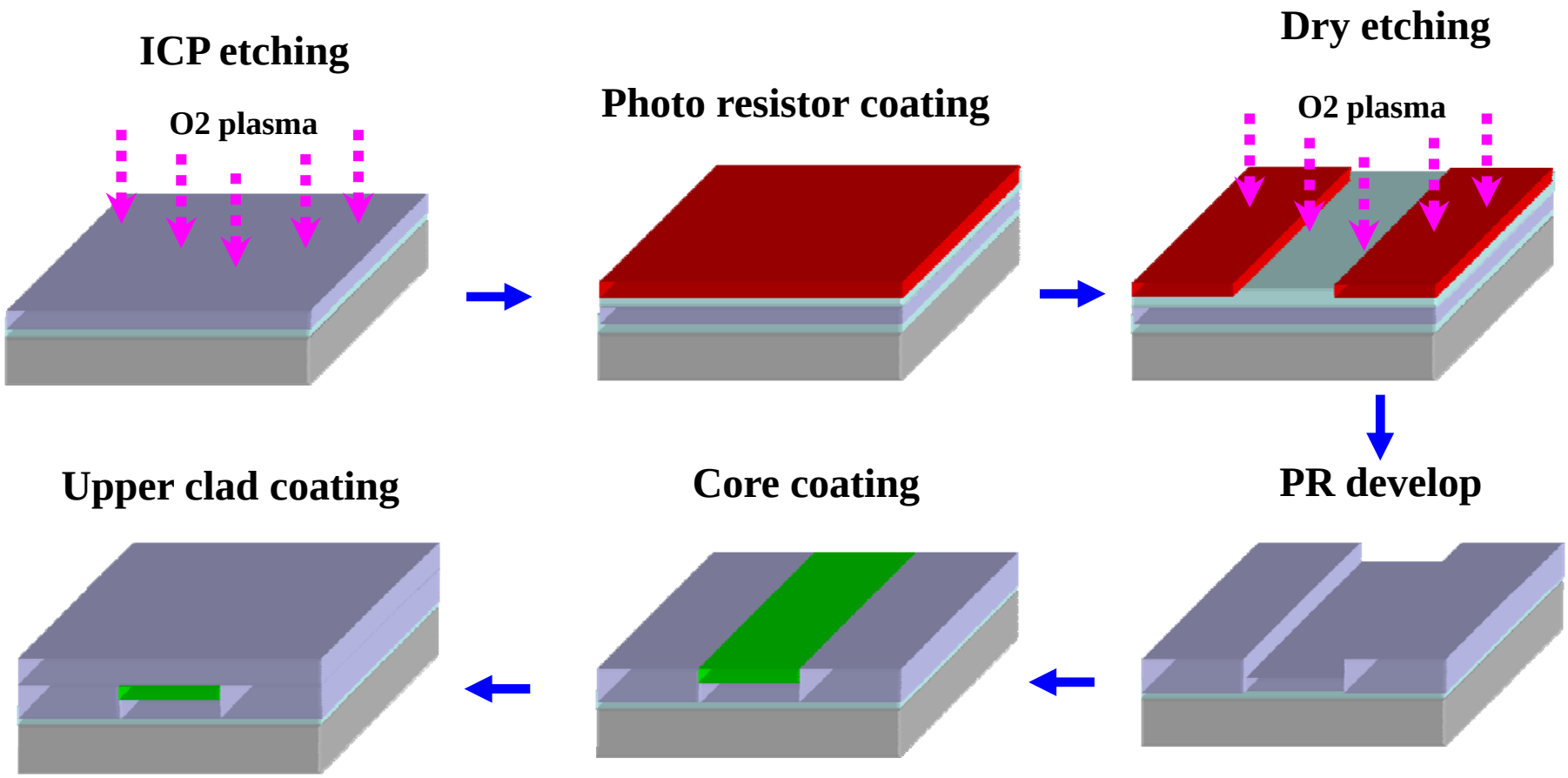
- ZAP-1020 drop
- Spin coating 2000~3000rpm/30sec
- 100~110℃/2~3min baking

Low clad coating

- WIR30-480 drop
- Spin coating
- UV curing 12~14mW/cm2 x 2~3min

Spin coating Fabrication Process of Waveguides

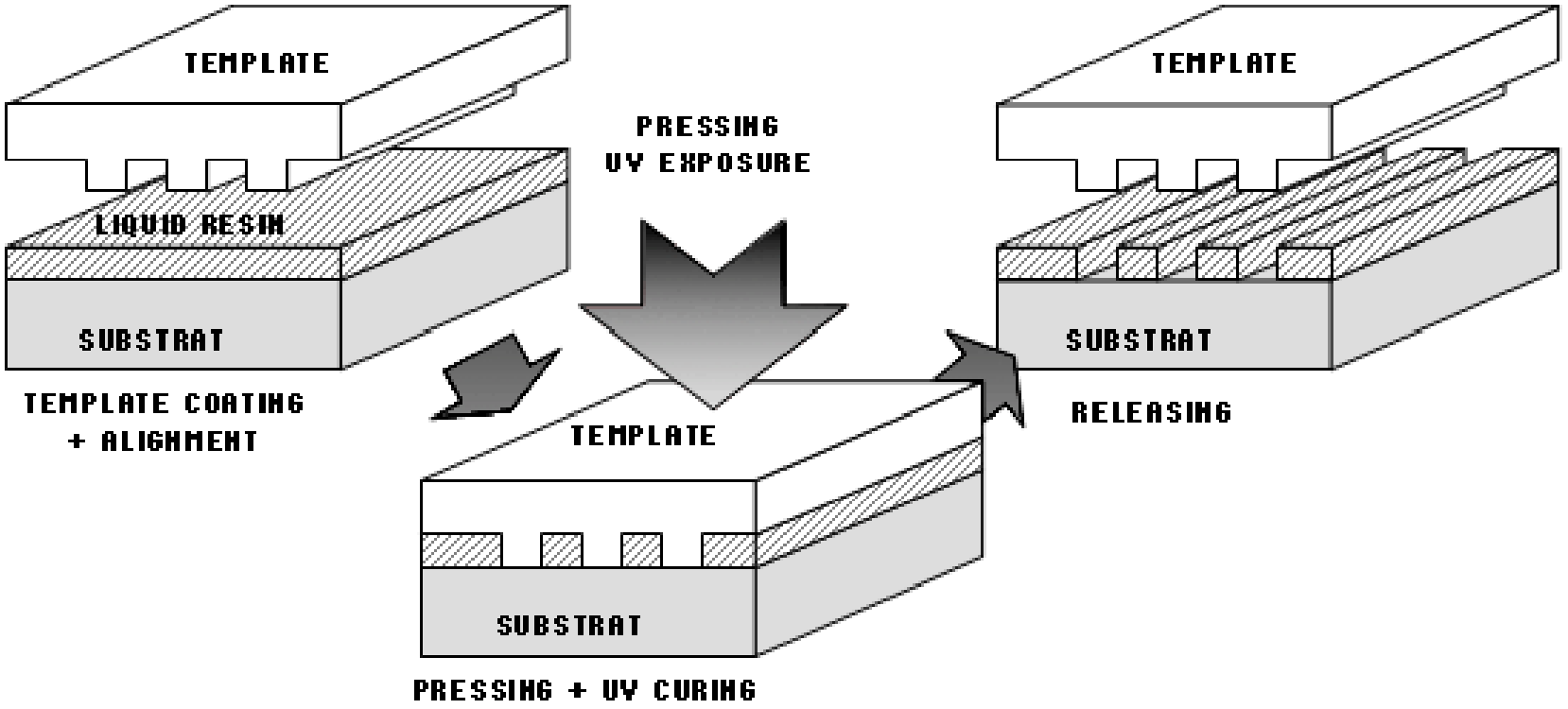
ChemOptics



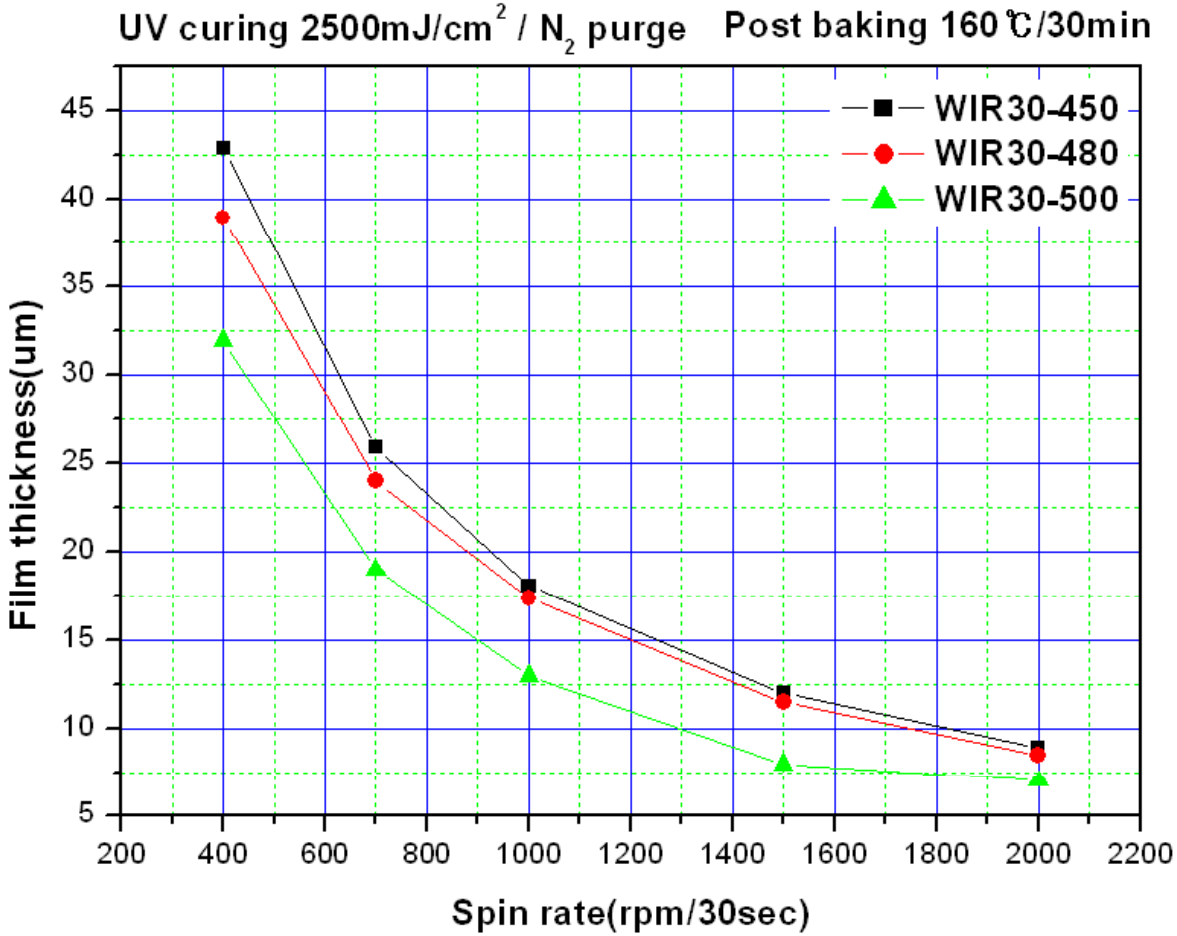
- WIR30-500 drop
- Spin coating
- UV curing 12~14mW/cm2 x 2~3min

UV imprinting Fabrication Process of Waveguides

ChemOptics



Film Thickness of Cured Polymer



Contact

ChemOptics

For further information, please feel free to contact us.

- **Address** 836 Tamnip-Dong, Yuseong-gu, Daejeon 305-510, South Korea
- **Phone** +82-42-344-0001
- **Fax** +82-42-344-0002
- **Website** http://www.chemoptics.co.kr
- **E-mail** sales@chemoptics.co.kr