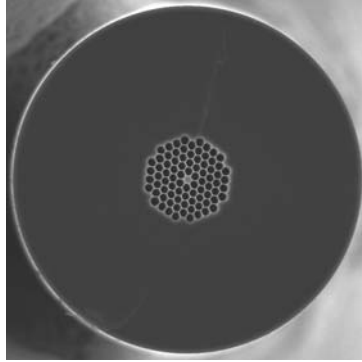


## NL – 2.4 – 800



**Nonlinearity:  $70 \text{ W}^{-1}\text{km}^{-1}$**   
**Zero dispersion  $\lambda=800\text{nm}$**   
**Single material**  
**Spliceable**

## Highly nonlinear PCF

Our highly non-linear photonic crystal fibers guide light in a small solid silica core, surrounded by a microstructured cladding formed by a periodic arrangement of air holes in silica. The optical properties of the core closely resemble those of a rod of glass suspended in air, resulting in strong confinement of the light and, correspondingly, a large nonlinear coefficient. By selecting the appropriate core diameter, the zero-dispersion wavelength can be chosen over a wide range in the visible and near infrared spectrum, making these fibers particularly suited to supercontinuum generation with Ti:Sapphire or diode-pumped  $\text{Nd}^{3+}$  laser sources.

### Unique properties of Highly nonlinear PCF

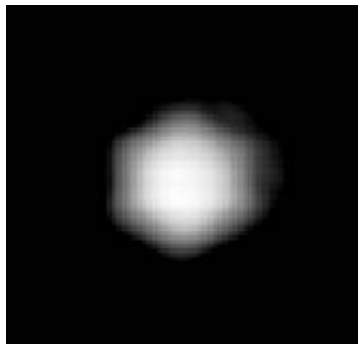
- Zero dispersion wavelengths from 670-880 nm available
- Non-linear coefficients from  $34\text{-}215 \text{ W}^{-1}\text{km}^{-1}$  available (cf  $1.1 \text{ W}^{-1}\text{km}^{-1}$  for SMF 28 at 1550 nm)
- Near-Gaussian mode profile

### Applications

- Supercontinuum generation for frequency metrology, spectroscopy or optical coherence tomography
- Four-wave mixing and self-phase modulation for switching, pulse-forming and wavelength conversion applications
- Raman amplification

To contact **BlazePhotonics**, please visit our website [www.blazephotonics.com](http://www.blazephotonics.com) or send an email message to [info@blazephotonics.com](mailto:info@blazephotonics.com)

## NL – 2.4 – 800



Typical measured near field profile (log scale)

### Optical properties

• Zero dispersion wavelength ( $\lambda_0$ )		800±5 nm
• Dispersion slope at $\lambda_0$		0.55 ps·nm <sup>-2</sup> ·km <sup>-1</sup>
• Attenuation	$\lambda_0$	< 80 dB/km
	1550 nm	< 50 dB/km
	1380 nm	< 420 dB/km
	1000 nm	< 60 dB/km
	600 nm	< 100 dB/km
• Mode field diameter <sup>1</sup> at $\lambda_0$		1.5±0.1 $\mu$ m
• Numerical aperture <sup>2</sup> at $\lambda_0$		0.19
• Effective nonlinear area <sup>3</sup>		2.8 $\mu$ m <sup>2</sup>
• Nonlinear coefficient <sup>4</sup> at $\lambda_0$		70 W <sup>-1</sup> ·km <sup>-1</sup>

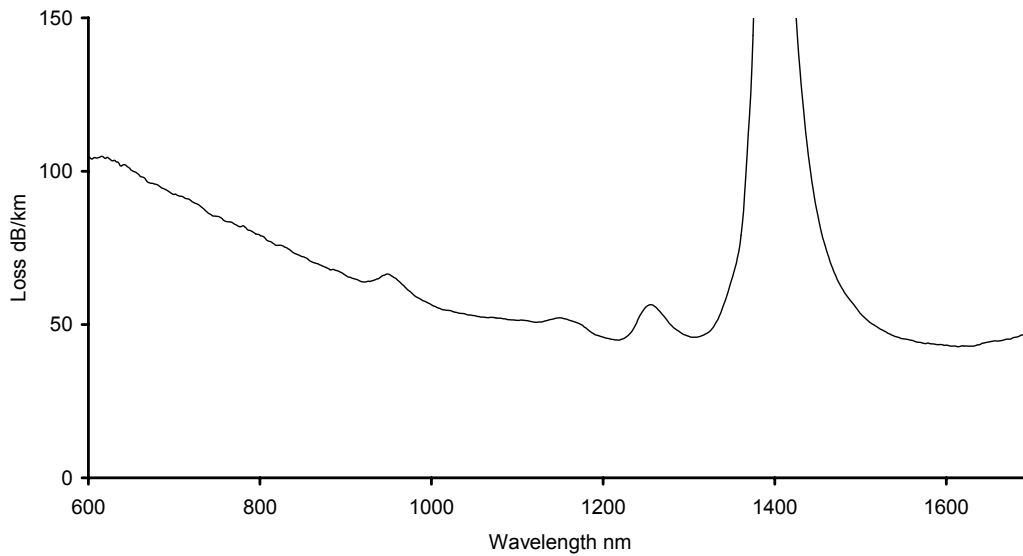
### Physical properties

• Core diameter (average)	2.4±0.1 $\mu$ m
• Pitch (distance between cladding holes)	2.9±0.1 $\mu$ m
• Air Filling Fraction in the holey region	>90%
• Width of struts holding the core	110±10 nm
• Diameter of holey region	27±0.5 $\mu$ m
• Diameter of outer silica cladding (OD)	105±1 $\mu$ m
• Coating diameter (single layer acrylate)	230±5 $\mu$ m
• Available length	up to 1 km

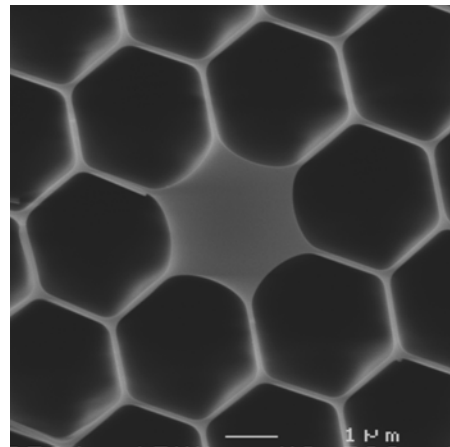
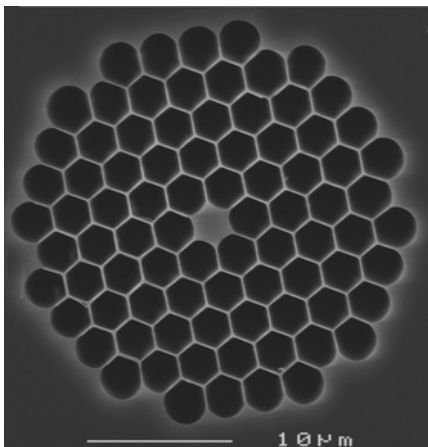
To contact BlazePhotonics, please visit our website [www.blazephotonics.com](http://www.blazephotonics.com) or send an email message to [info@blazephotonics.com](mailto:info@blazephotonics.com)

## NL – 2.4 – 800

### Measured attenuation spectrum



### SEM image of PCF region and core



To contact **BlazePhotonics**, please visit our website [www.blazephotonics.com](http://www.blazephotonics.com) or send an email message to [info@blazephotonics.com](mailto:info@blazephotonics.com)

## Notes

- 1 Full 1/e-width of the near field intensity distribution
- 2 Sine of half angle at which a Gaussian fit to the far field intensity distribution has dropped to 1% of its peak value

3

$$A_{\text{eff}} = \frac{\left( \int_{\infty} |\mathbf{E}(\mathbf{r})|^2 d^2\mathbf{r} \right)^2}{\int_{\text{silica}} |\mathbf{E}(\mathbf{r})|^4 d^2\mathbf{r}}$$

4

$$\gamma = \frac{2\pi n_2}{A_{\text{eff}} \lambda}$$

$n_2 \approx 2.5 \times 10^{-20} \text{ m}^2 \text{ W}^{-1}$  for silica