

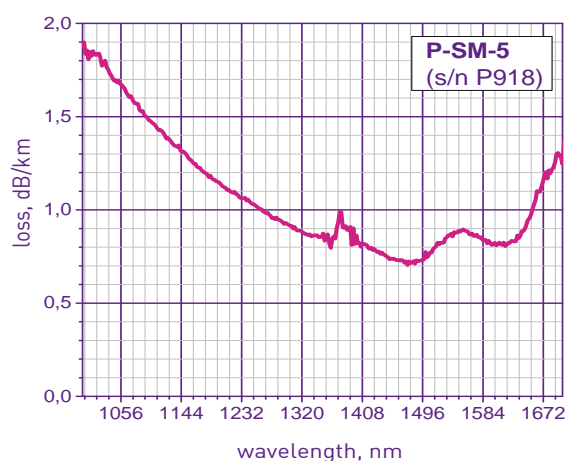
# SPECIALTY FIBER PHOSPHORUS DOPED FIBERS

## ARTICLE P-SM

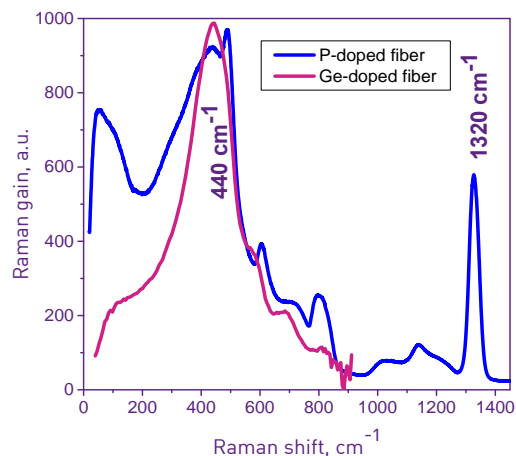
P-SM series is specially designed for highly efficient Raman lasers and amplifiers operating in the 1.1-1.6  $\mu\text{m}$  spectral range. The main advantage of phosphorus-doped fiber is a three times higher value of the Raman shift as compared to germanium-doped fibers. This feature allows one to strongly simplify the Raman fiber laser and amplifier design. For example, to construct a high-power laser @ 1480nm required for pumping Er-doped fibers, only two cascades of Raman wavelength transformation are necessary, whereas six cascades are necessary in the case of Ge-doped fibers.

P-SM-5-PM series is specially designed with ability to maintain polarization.

Typical optical loss spectrum



Typical Raman gain spectrum



FIBER SPECIFICATIONS	P-SM-5	P-SM-7	P-SM-8	P-SM-5-PM
Core diameter, $\mu\text{m}$	$5.0 \pm 0.5$	$5.0 \pm 0.6$	$5.5 \pm 0.5$	$5.0 \pm 0.5$
Clad diameter, $\mu\text{m}$			$125 \pm 1$	
Noncentricity, $\mu\text{m}$			< 1	
Core NA			$\sim 0.18$	
Raman gain @ 1480 nm, dB/km·W	> 5.8	> 6.0	> 5.0	> 5.0
Core ellipticity, %	< 5	< 5	< 5	< 30
Optical loss (1064 nm), dB/km	< 2.0	< 2.9	< 2.1	< 3.0
Optical loss (1240 nm), dB/km	< 1.2	< 1.95	< 1.1	< 2.0
Optical loss (1480 nm), dB/km	< 1.0	< 1.45	< 1.0	< 2.0
Fiber type:	SM	SM	SM	PANDA
PER, dB	-	-	-	> 20 after 30 m

Other parameters are available on the request