



Supporting Information

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Polymeric Photonic Crystal Fibers for Textile Tracing and Sorting

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Supporting Information

Fabric-Integrated Polymeric Photonic Crystal Fibers for Textile Tracing and Sorting

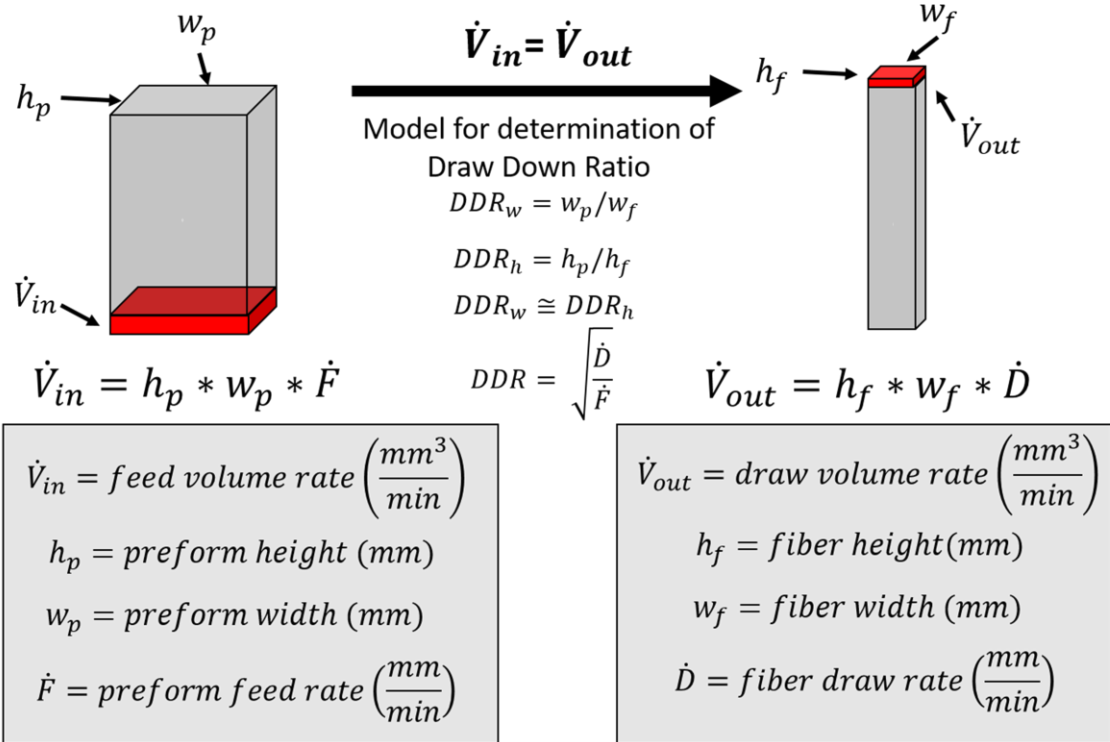
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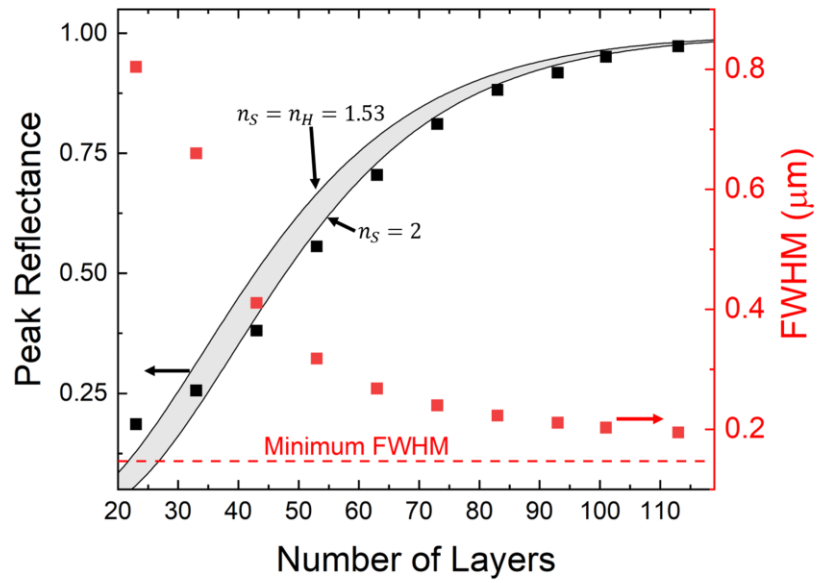
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MIT-Lincoln Laboratory, Lexington, MA, 02421

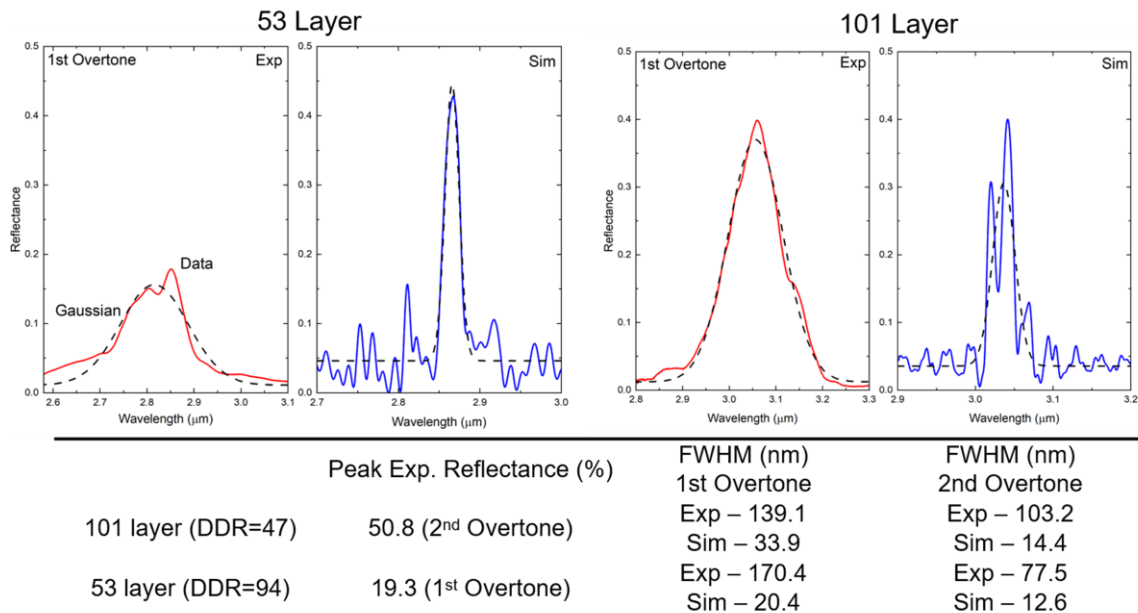


*Initial preform feed rate is calibrated based on standard preform (h=w=25.4 mm and F = 1 mm/min)

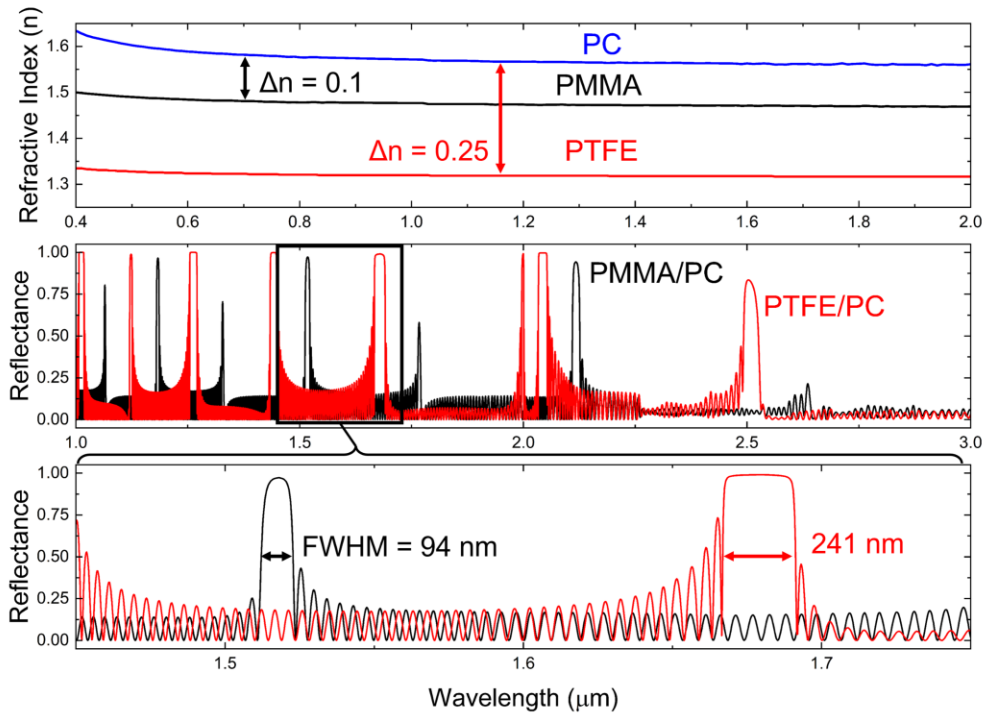
Supplemental Figure 1: Derivation of Draw Down Ratio



Supplemental Figure 2: Analytical and Numerical Simulations of Reflectance and FWHM

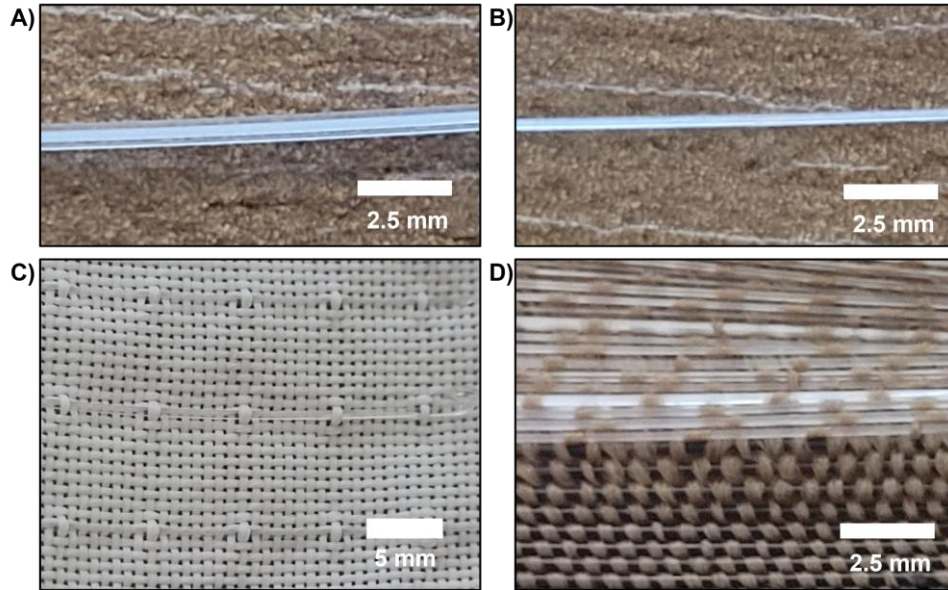


Supplemental Figure 3: Reflectance Intensity and FWHM Comparison



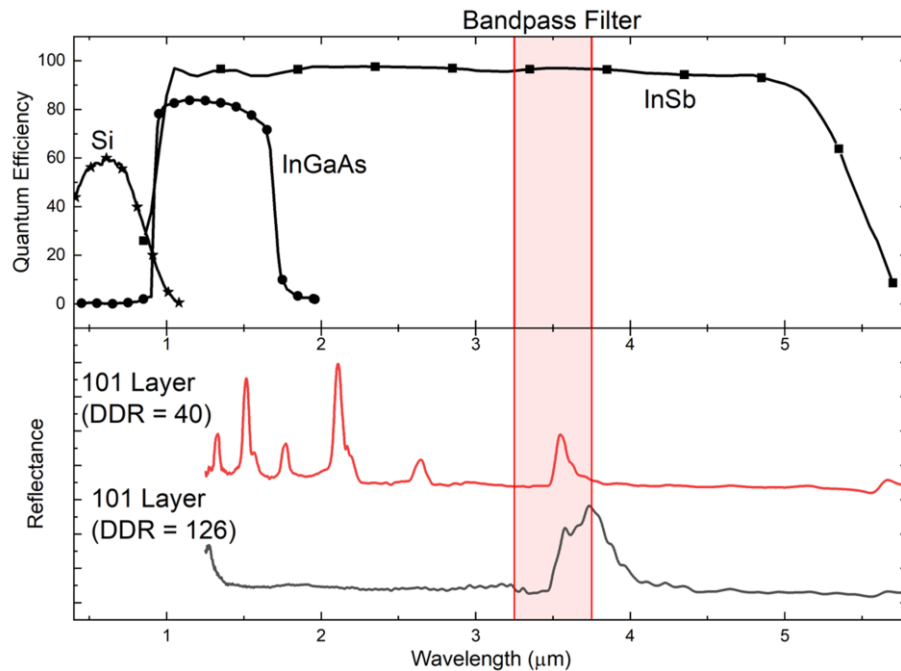
Supplemental Figure 4: Refractive Index Impact on FWHM

Larger refractive index contrast material pairs, such as PC and PTFE ($\Delta n = 0.25$) will increase the FWHM for both fundamental and overtone peaks (middle and bottom).



Supplemental Figure 5: Individual and Woven Fibers Under Normal Illumination

A) View of 101-layer fiber (drawn at 2.0 m min^{-1}) under normal illumination, taken using a standard smartphone camera B) View of 53-layer fiber (drawn at 8.0 m min^{-1}) under normal illumination C) 101-layer fiber integrated into white polyethylene fabric D) 101-layer fiber woven with brown polypropylene and black nylon fibers.



Supplemental Figure 6: Matching Bandpass Filter Window with Infrared Imaging and Fiber Reflectance