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**Nanowire waveguide made of extremely anisotropic metamaterials**[1] Y.J. HUANG, W.T. LU, S. SRIDHAR, Department of Physics and Electronic Materials Research Institute, Northeastern University, Boston, MA 02115 — We consider wave propagation along a cylindrical fiber with anisotropic optical property. Exact solutions are obtained for all the modes. For extremely anisotropic cylinder where the transverse permittivity is negative while the longitudinal permittivity is positive, only transverse magnetic and hybrid modes will propagate on the waveguide. At a given frequency the waveguide support infinite number of eigenmodes. For the TM modes, there exists at most one forward wave. The rest of them are backward waves. These waveguides can be used as filter and phase shifter in integrated optical circuits.

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S. Sridhar
Department of Physics and Electronic Materials Research Institute,
Northeastern University, Boston, MA 02115

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