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Title:Low Raman-noise correlated photon-pair generation in a dispersion- engineered chalcogenide As₂S₃ planar waveguide

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Abstract:We demonstrate low Raman-noise correlated photon-pair generation in a dispersion-engineered 10 mm As₂S₃ chalcogenide waveguide at room temperature. We show a coincidence-to-accidental ratio (CAR) of 16.8, a 250 times increase compared with previously published results in a chalcogenide waveguide, with a corresponding brightness of 3 × 10⁵ pairs s⁻¹ nm⁻¹ generated at the chip. Dispersion engineering of our waveguide enables photon passbands to be placed in the low spontaneous Raman scattering (SpRS) window at 7.4 THz detuning from the pump. This Letter shows the potential for As₂S₃ chalcogenide to be used for nonlinear quantum photonic devices. © 2012 Optical Society of America.

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