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Title:Widely tunable parametric amplification and pulse train generation by heating a photonic crystal fiber

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Abstract:We describe a simple technique that allows for the achievement of widely tunable parametric generation in a photonic crystal fiber. This is achieved by heating the fiber and using a specific phase-matching condition in the normal dispersion regime which is highly sensitive to temperature. Experimental results show a sideband tunability of about 17 THz in the 800 nm and 1550 nm spectral bands by heating the fiber from room temperature to 500° C, leading to a tuning rate of 34 GHz/° C. By adding a small tunable continuous-wave seed together with the pulsed pump, we further show the generation of sub-nanosecond pulses tunable around 800 nm through parametric amplification.

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