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An optically pumped InGaAsP/InP quantum dot rolled-up microtube laser PABLO BIANUCCI, Department of Engineering Physics, École Polytechnique de Montréal, Montreal QC, H3C 3A7, M. HADI TAVAKOLI DASTJERDI, SHOUVIK MUKHERJEE, MEHRDAD DJAVID, Department of Electrical Engineering, McGill University, Montreal QC, H3A 2A7, PHILIP POOLE, Institute for Microstructural Sciences, National Research Council, Ottawa, Ontario K1A 0R6, Canada, ZETIAN MI, Department of Electrical Engineering, McGill University, Montreal QC, H3A 2A7 — Rolled-up quantum dot microtubes are a promising candidate for light sources in integrated photonics. We have fabricated InGaAsP/InAs quantum dot rolled-up microtubes from InGaAsP strained bilayers with embedded InAs quantum dots (grown by chemical beam epitaxy). In room-temperature photoluminescence experiments we have observed resonant-mode emission with wavelengths in the telecom range. This resonant emission is consistent with whispering gallery modes. At a temperature of 82 K, we have demonstrated multi-mode lasing under continuous wave optical pumping. We estimate an ultra-low lasing threshold near 1.25 μ Ws of absorbed optical power.

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Prefer Oral Session
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