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Laser performance at 1064 nm in Nd³⁺ doped oxi-tellurite glasses¹ MARIA JOSE BELL, VIRGÍLIO ANJOS, LYANE MOREIRA, RODRIGO FALCI, Federal University of Juiz de Fora, LUCIANA KASSAB, Faculdade de Tecnologia de São Paulo, D. SILVA, Escola Politécnica da USP, JEAN LOUIS DOUALAN, PATRICE CAMY, RICHARD MONCORGE, Universite de Caen, France — The search for Nd³⁺ doped new solid-state laser hosts having specific thermo-mechanical and optical properties is very active. Among tellurites, the TeO₂-ZnO glass combines good mechanical stability, chemical durability, high linear and nonlinear refractive indices, low phonon energies ($\sim 750 \text{ cm}^{-1}$) and a wide transmission window (0.4-6) μ m). Their high nonlinear optical properties can be used for the development of Kerr-lens mode-locked subpicosecond lasers. The present work concentrates on the luminescence properties and the laser performance of a TeO_2 -ZnO tellurite glasses doped with Nd^{3+} . True continuous-wave laser action is achieved by pumping the sample with a CW Ti:Sapphire laser inside a standard two-mirror laser cavity. A low laser threshold of 8 mW and a laser slope efficiency of 21% could be obtained for an output coupler transmission of 2.7%, which is an encouraging improvement compared to what was reported in the past with other Nd-doped tellurite bulk glasses.

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