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Material Improvements of ZnCdSe/ZnCdMgSe Heterostructures for Quantum Cascade Laser Applications with Incorporation of Growth Interruptions During MBE Growth THOR GARCIA, The Graduate Center of CUNY, New York, NY 10016, JOEL DE JESUS, The Graduate Center of CUNY,New York, NY 10016, ARVIND RAVIKUMAR, Princeton University, Princeton, NJ 08544, SONGWOUNG HONG, The City College of New York, New York, NY 10031, CLAIRE GMACHL, Princeton University, Princeton, NJ 08544, AIDONG SHEN, The City College of New York, New York, NY 10031, MARIA TAMARGO, The City College of New York, NY, NY 10031 — We report on the growth of ZnCdSe/ZnCdMgSe/InP Quantum Cascade (QC) structures with improved electrical and material properties. Material quality has been previously addressed by limiting the lattice mismatch to within 0.2% of InP. However, the yields of high quality material have remained low and lasing has not been observed. To address the low growth yields we have investigated possible mechanisms for degradation of the material. Growth interruptions during the MBE growth were added to the active core of the QC laser structure. High resolution XRD and PL were used to evaluate the material quality. Fabricated devices with growth interruptions show a dramatic improvement in the electroluminescence spectral properties.

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