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Plasma Kinetics of High Power Overtone Carbon Monoxide Lasers YURII UTKIN, MATTHEW GOSHE, IGOR ADAMOVICH, WALTER LEMPERT, J. WILLIAM RICH, Ohio State University — Electric-discharge-excited carbon monoxide gas lasers, operating on either the fundamental vibrational bands (near 5 μ) or first overtone vibrational bands (near 2. 5 μ) are among the very few lasers operating at high efficiencies ($> 10\%$) that are scalable to truly high c.w. powers. We report the recent development of a small compact first overtone band CO laser, together with a plasma kinetic model of the laser. Model calculations show that it is possible to build a CO laser operating on the second and higher vibrational overtone bands, with high efficiencies and powers. The possibility of lasing over a very large bandpass, extending to short IR wavelengths, is discussed.

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