SHORT-WAVELENGTH (30 TO 150 μm) OPTICALLY PUMPED LASER LINES IN A METHANOL LASER

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A new short-wavelength far-infrared laser[a] is used to generate optically pumped far-infrared laser radiation in the wavelength range 30 to 150 μm in methanol. The large-amplitude torsional motion in methanol accounts for its rich far-infrared spectra. Its infrared absorption bands overlap well with the CO_2 laser providing for the generation of strong high-frequency laser lines in the far-infrared. Methanol is an excellent short wavelength laser medium and about 40% of its lines have wavelengths shorter than 150 μm. We have already obtained a four-fold increase in the number of laser lines in the 50 μm region, and are now pushing to increase the density of laser lines with $\lambda <$ 50 μm. A list of the strong laser lines observed in methanol, in the range 30 to 150 μm, will be presented in this work.

[a]For detailed description of the laser see paper presented by K.M. Evenson at this meeting.