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- GAMMA IRRADIATION OF RUBY LASER CRYSTALS. *C. R. Philbrick, W. R. Davis, A. C. Menius, Jr. and M. K. Moss.*

After Co^{60} γ -irradiation of ruby laser crystals, transmittance spectral studies showed that the laser absorption maximum centered in the green was left essentially unchanged while the transmittance at lower wavelengths was greatly decreased, due at least in part to color center formations. However, absorption in the red around the laser lines was not significantly changed. Phosphorescence centered around the R_1 line was observed from the ruby laser crystals immediately after the Co^{60} γ -irradiation. While the phosphorescence decayed with time, it could be partially restored by stimulation with visible and ultraviolet light. The intensity of the phosphorescence was also compared with the fluorescent emission of the ruby crystal under ultraviolet excitation. These studies led to investigation of the effect of gamma irradiation on the energy output of ruby laser crystals. With controlled gamma irradiation, the energy output of the ruby laser was increased by several factors. The energy output was measured with a standardized calorimeter and simultaneously, with a phototube. The laser output as a function of Co^{60} γ -radiation dosage was studied.