

Abstract Submitted
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Optical Spectroscopy of Defects in Yttrium Orthovanadate (YVO4) Crystals¹ WAI SZE CHEUNG, KATRINA WIECHMANN, PETER SHELDON, Randolph College, Lynchburg, VA, HANK YOCHUM, MARCIA YOCHUM, Sweet Briar College, Sweet Briar, VA — Yttrium orthovanadate (YVO4) is an insulating crystal used in several important and emerging optical technologies such as a solid-state laser host material and in fiber optic components for telecommunications. We are engaged in a study of the growth-related and radiation-related point defects that result in discoloration of commercial quality YVO4. These defects can reduce the usefulness of the material. Alternatively, these same defects may actually play a beneficial role in the use of YVO4 for other applications, such as the observed Anti-Stokes Luminescence (light which is converted to a higher energy due to a two-photon process in the crystal) which could make the YVO4 a candidate for blue lasers. It has been surmised [1] that some of these “useful” defects are related to oxygen vacancies in the crystal, so we are exploring the effects on defects after annealing the YVO4 in Oxygen and other gas atmospheres. [1] Anti-Stokes emission in undoped YVO4, W. Ryba-Romanowski, S. Golab, P. Solarz, and G. Dominiak-Dzik, Applied Physics Letters, 80, 1183 (2002).

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