

Abstract Submitted
for the SHOCK13 Meeting of
The American Physical Society

Theoretical and Experimental Study of $A_3B_5O_{12}$ Garnets Under High Pressure¹ ALFONSO MUNOZ, Departamento de Física Fundamental II, IMN, Universidad de La Laguna, Spain, VIRGINIA MONTESEGURO, Departamento de Física Fundamental, Electrónica y Sistemas , Universidad de La Laguna, Spain, PLACIDA RODRIGUEZ-HERNANDEZ, Departamento de Física Fundamental II, IMN, Universidad de La Laguna, Spain, FRANCISCO JAVIER MANJON, IDFPV Univ. Politècnica de València. 46022 València, Spain, VICTOR LAVIN, Departamento de Física Fundamental, Electrónica y Sistemas , Universidad de La Laguna, Spain, MALTA CONSOLIDER TEAM TEAM, MAT2010-21270-C04-02/03/04 COLLABORATION, CSD2007-0045 COLLABORATION — In the last years oxide garnets are being used for technological applications in the field of solid state materials, especially as active matrices for lasers. Features such as high thermal conductivity, hardness, and chemical and mechanical stability make them good host matrices for luminescent Rare Earth (RE^{3+}) ions. In this sense, large efforts have been spent to investigate the luminescence properties of (RE^{3+}) doped nano-structured garnets , especially in the development of lasers and phosphors in lightning applications and as an alternative to quantum dots in the development of photonic and optoelectronic devices. In this contribution we will present a combined *ab initio* and experimental study of the structural, dynamical and mechanical stability properties of some $A_3B_5O_{12}$ garnets under high pressure.

¹MAT2010-21270-C04-02/03/04, CSD2007-0045, BES-2011-044596,

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Date submitted: 20 Feb 2013

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