1043-81-96 **Ali Hatef** (ahatef@uwo.ca), The Department of Physics and Astronomy, The University of Western Ontario, London, Ontario N6A-3K7, Canada, and **R Singh Mahi*** (msingh@uwo.ca), The Department of Physics and Astronomy, The University of Western Ontario, London, Ontario N6A-3K7, Canada. *Nonlinear Schrödinger equation method and its application to metallic crystals.* Preliminary report.

A considerable effort has been devoted to study the metallic photonic crystals which can be used to make new type optoelectronic devices working at high temperature. In this paper, we have studied the nonlinear quantum optics of these materials using nonlinear Schrödinger equations method.We consider that the metallic crystal is made from metallic spheres which are arranged periodically in a background dielectric material. we have performed the numerical simulation on the time evolution of the absorption process in metallic crystals doped with three-level nanoparticles. Recently we have studied the time evolution of the absorption in dielectric photonic crystals . Three electronic states of the nanoparticles are considered in the calculation of the absorption process. In the numerical simulation, we have used the theory of Singh developed for the metallic photonic crystals .We consider that the nanoparticles are interacting with the metallic crystals through the electron-photon interaction.To obtain the time dependent absorption coefficients the differential equations for the density matrix elements are solved numerically, using the LSODE numerical method in the Maple scientific computing environment. (Received August 20, 2008)