sist SC 1827. The measured modulation values, as well as the photoreaction kinetic constant (C Dill parameter) were compared with independent measurements performed under homogeneous exposition, for three different wavelengths. The good accordance of the results demonstrates the applicability of the method for measurement of the kinetic constant of the photoreaction as well as for the measurement of the refractive index and absorption coefficient modulations.

[11/05/10 - 16h45 - Room 5]
Silver Nanorods Produced by Femtosecond Laser Pulses, RICARDO ELGUL SAMAD, THIAGO DA SILVA CORDEIRO, ANDERSON ZANARDI DE FREITAS, NILSON DIAS VIEIRA JUNIOR, *Instituto de Pesquisas Energéticas e Nucleares, IPEN/CNEN-SP - São Paulo - Brasil*, CAMILA NABESHIMA, RICARDO ALMEIDA DE MATOS, LILIA CORONATO COURROL, *Universidade Federal de São Paulo - UNIFESP - São Paulo - Brasil* ■ In this work we describe the study of a photoinduction method to produce silver nanorods using femtosecond laser pulses irradiation of silver solutions. The start solutions were prepared by mixing autopolymerizable resin and AgNO3 with water solutions, and illuminating those with a Xenon lamp. Various concentrations and irradiation times were used, and these irradiation processes produce spherical silver nanoparticles with sizes ranging from 30 to 100 nm. Afterwards, 30 femtosecond ultrashort pulses with energy around 200 microjoules were used to irradiate the nanoparticles solutions. All solutions were characterized by ultraviolet-visible spectroscopy and TEM microscopy. We observed that these ultrashort pulses irradiations, besides decreasing the spherical nanoparticles sizes, can create nanorods depending on the irradiation parameters. No additives, such as solvents, surfactants or reducing agents, were used in the procedures. The spherical nanopaticles size reduction can be explained by a multiphoton process that promotes the photoexcitation of surface the plasmon band, charging the particles up to the limit were Coulombic rupture occurs due to charge excess, resulting in size reduction. In the early stage of the process, the majority of smaller silver particles are directed to growing into nanorods with uniform diameters in the range from 3 to 6 nanometers. The nanorods solutions have high water solubility, good colloidal stability, stable fluorescence properties, and are amenable in deriving various functional nanoprobes.

[11/05/10 - 17h00 - Room 5]
Up-conversion luminescence from colloidal solutions of rare-earth-ions doped with $\mathbf{NaYF_4}$ nanocrystals infiltrated in the core of PCF fiber, C. TOLENTINO DOMINGUEZ, A. S. L. GOMES, CID B. DE ARAÚJO, *Universidade Federal de Pernambuco, Departamento de Física, Cidade Universitaria, Recife, PE 50670-901, Brazil*, PARAS N. PRASAD, *Institute for Lasers, Photonics and Biophotonics, Departament of Chemestry, University at Bufalo, State University of New York 14260* ■ We present results of up-conversion emission from colloidal solutions of Tm^{3+} and Er^{3+} rare earth ions in $NaYF_4$ host infiltrated in hole core photonic crystal fibers (PCF). The optical excitation has obtaining from cw diode laser emitting in 977 *nm*. The non-linear processes from materials doped with trivalent rare earths chemical elements are well known and have attracted the attention of researchers since about three decades ago. The best known ions that have higher prospects of scientific and technological application are Tm^{3+}, Er^{3+}, Ho^{3+}, Nd^{3+} and Pr^{3+}. In these applications, the up-conversion process is based on a sequential transfer of energy between different ions of rare earths where the wavelength of the radiation emitted is smaller than the pumping wavelength. Thus, for example, using IR cw pumping, we can observe near IR, visible and UV emission. These processes of absorption of multiple photons using cw diode lasers of low optical power and low cost, and have found potential applications in optical communications, biophotonics, etc. In most studies of up-conversion processes using rare earth ions in different hosts are limited to bulk (macrocrystals) and powder (microcrystals and nanocrystals) ones. Colloidal solutions are used particularly in acquisition *in vivo* and *in vitro* bio-images. The emission spectra of our samples present two unusual bands: ${}^1D_2 \rightarrow {}^3H_6$ transition from Tm^{3+} and ${}^2H_{9/2} \rightarrow {}^4I_{15/2}$from Er^{3+}. We ascribe these unusual bands to the strong confinement of light in the core of PCF. The observation of these additional emission bands are reported for bulk, microcrystals, nanocrystals or colloidal solutions submitted to high power optical pumping.

[11/05/10 - 17h15 - Room 5]
Thermally resistant waveguides fabricated in Nd:YAG ceramics by crossing femtosecond damage filaments, W. F. SILVA, C. JACINTO, *Grupo de Fotônica e Fluidos Complexos, Instituto de Física, Univiversidade Federal de Alagoas, 57072-970,Maceió, Alagoas, Brazil*, A. BENAYAS, E. CANTELAR, J. LAMELA, F. JAQUE, D. JAQUE, *Departamento de Física de Materiales, Facultad de Ciencias, Universidad Autónoma de Madrid,Madrid 28049, Spain*, J. R. VÁZQUEZ DE ALDANA, G. A. TORCHIA, L. ROSO, *Grupo de Optica, Facultad de Ciencias, Universidad de Salamanca, Salamanca 37008, Spain*, A. A. KAMINSKII, *Institute of Crystallography, Russian Academy of Sciences, Moscow 119333, Russia* ■ We report on femtosecond laser writing of channel waveguides in Nd^{3+} ion doped YAG ceramics by multiple inscriptions of damage filaments. Neodymium-doped transparent YAG ceramics (hereafter Nd:cYAG) is nowadays one of the most promising laser materials with outstanding properties [1]. The future incorporation of Nd:cYAG in compact devices requires the fabrication of channel waveguides in which the 2D light confinement would lead to a much higher optical intensities. Among the different methods already used for the fabrication of channel waveguides in the Nd:cYAG system [2], direct laser writing with femtosecond pulses is of special relevance because of its reduced processing times, its simplicity, and its true 3D versatility. In a first step, two filaments separated of 30 μm were written translating the sample in the direction perpendicular to the laser polarization and the pulse propagation, with a speed of 50 μm/s. Then the sample was turned 90^o and a second pair of filaments, overlapping to the first one was inscribed. Waveguiding between the two orthogonal pairs