

Abstract Submitted  
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**Lattice dynamics of laser excited self-assembly gold nanocrystals by time resolved X-ray diffraction** KOUHEI ICHIYANAGI, HIROSHI SEKIGUCHI, University of Tokyo, SHUNSUKE NOZAWA, TOKUSHI SATO, SHIN-ICHI ADACHI, High Energy Accelerator Research Organization, YUJI C. SASAKI, University of Tokyo — The self-assembled gold nanoparticle has attracted considerable interest from researchers as the new nanodevices and bio-sensors. Functional groups such as thiols and amines have assembled on the gold nanoparticles in solution. For using the functional optical nanomaterial, it is necessary to reveal the mechanism of interaction between the laser and the functional nanomaterial. In the present work, we observed the effect of photo-excited process of self-assembled gold nanocrystal in ethanol solution using picosecond time-resolved X-ray diffraction. Gold nanocrystals deposited on the NaCl (100) substrate. After isolation of gold nanocrystals from the substrate, these nanocrystals were assembled with 10-Carboxydecyl disulfide molecules in ethanol. The nanocrystals size was the diameter of about 60 – 120 nm. The X-ray energy, pulse width and repetition rate for probing the gold nanocrystals were 15 keV, 100 ps and 945 Hz, respectively. The excitation wavelength and the pulse width were 400 nm and 150 fs. The detailed results of the lattice dynamics inside gold nanocrystals will be presented in the presentation.

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