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Oxide nanoparticles synthesis via laser-induced plasma in liquid TAKU GOTO, HANSEL WEIHS, Osaka University, MITSUHIRO HONDA, SERGEI KULINICH, Tokai University, YOSHIKI SHIMIZU, AIST, TSUYOHITO ITO, Osaka University — Laser ablation in fluids has recently attracted a lot of attention as one of synthetic techniques to prepare new attractive nanomaterials, with the ability to control both product chemistry and morphology in many systems. In this study, we generated laser-induced plasma in H₂O – ethanol mixtures, while ablating metal targets to produce oxide nanoparticles and to study the effect of the medium on their properties. The ablated targets used in this study were Zn or Sn plates. A nanosecond Nd:YAG laser with the wavelength of 532 nm (10 Hz, 20-30 mJ/pulse) was applied to irradiate the targets. The liquid media were maintained at 0.1 to 30 MPa to study the effect of pressure. We found that the H₂O/ethanol ratio (at atmospheric pressure) can control the properties of the produced ZnO nanoparticles, such as defects and oxidation degree. The properties were examined by photoluminescence (PL) spectroscopy, X-ray diffraction, electron microscopies, and so on. More details will be presented at the symposium.

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