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Nanoparticle film deposition via mist-included plasma source KOSUKE TAKENAKA, YUSUKE OKUMURA, KEN CHO, YUICHI SETSUHARA, Joining and Welding Research Institute, Osaka University — Oxide-ceramics nanoparticles are expected as functional materials in wide range of applications including power devices and environmental protection system. For fabrication of nanoparticle films, it is significant to establish modification techniques of nanoparticles in terms of phase structures and/or chemical states of surfaces. However, modification of these nanoparticles via conventional annealing processes involves problems associated with agglomeration nature of nano-particles: grain growth due to sintering and/or formation of complex oxide compounds. In order to overcome these constraints, mist-included high-density RF plasma source has been developed for gas-phase modification and direct deposition of nanoparticles. For the modification and deposition of nanoparticles, the inductively coupled RF discharge was generated with injection of mists. In this presentation, performance of plasma source will be reported together with properties of nanoparticles films deposited after passing through the plasmas.

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