

Abstract Submitted  
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**Preparation of Co nanoparticles embedded in anatase matrix by pulsed laser deposition** KATSURA IKEMIYA, YASUSHI HIROSE, TOSHIHIRO SHIMADA, TETSUYA HASEGAWA, Department of Chemistry, The University of Tokyo / KAST / JST — Co nanoparticles embedded in anatase matrix were successfully obtained by pulsed laser deposition.  $\text{LaSrAlO}_4(001)$  was used as the substrate, on which a thin epitaxial seed layer of (001) oriented anatase  $\text{TiO}_2$  was fabricated. When depositing  $\text{Ti}_{1-x}\text{Co}_x\text{O}_2$  on the seed layer, phase separation into anatase  $\text{TiO}_2$  and Co metal took place, and Co nanoparticles were dispersed in an anatase matrix. The  $\text{TiO}_2$  seed layer substantially improved the crystallinity of anatase phase, which is speculated to promote the segregation of Co metal from anatase. TEM-EDS measurements revealed that the size of Co particles increased with increasing film growth temperature. Furthermore, we found that coercivity changed as a function of the particle size, as predicted by theoretical calculations.

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