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**Controlled surface reorganization of complex oxides by laser MBE** MIKHAIL KAREEV, B. GRAY, JIAN LIU, E.J. MOON, J. CHAKHALIAN, University of Arkansas — We report on the fabrication of ultra-thin layers of complex oxide perovskites, which display a variety of high-order surface reconstructions. In order to obtain the observed complex surface reconstructions (e.g.  $6\times 2$ ,  $4\times 2$ ,  $4\times 4$ , etc.), nearly stoichiometric complex oxide material are found to be re-arranged into specific combinations of long-ordered periodic structures. We examine details of homo- and heterogeneous growth of  $\text{SrTiO}_3$  (STO) and  $\text{LaNiO}_3$  respectively on  $\text{TiO}_2$  terminated and mixed  $\text{TiO}_2/\text{SrO}$  termination STO substrates by the combination of high-pressure RHEED and AFM to investigate mechanisms behind the high order surface reconstruction. J.C. was supported by DOD-ARO under the Contract No. 0402-17291 and NSF Contract No. DMR-0747808.

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