Pulsed laser deposition: Instrumentation and characterization

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Pulsed laser deposition (PLD) is a versatile thin film technique to fabricate a variety of compounds. Originally, PLD has been developed to fabricate high-Tc cuprate thin films, but now extended to almost all oxide materials. As the pulsed laser intensity is so high, nearly stoichiometric transfer of the target composition to thin films is possible. Utilizing reflection high energy electron diffraction (RHEED), we can precisely control the thickness in the scale of unit cells. Here, we review standard instrumentation and fabrication process of PLD. We also discuss possible application of PLD to other material systems than oxides.