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**Microstructure and Growth Mechanism of $Ca_3Co_4O_9$ Thin Films on Si and Glass Substrates**[1] YUFENG HU, Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, ELI SUTTER, Center for Functional Nanomaterials, Brookhaven National Laboratory, WEIDONG SI, QIANG LI, Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory — It has been discovered recently that cobaltates have very large thermoelectric power, which shows that cobaltates hold great promise to be potential integrated heating spreading solution, such as thermal management of microprocessors. Among the cobaltates, $Ca_3Co_4O_9$ is exhibiting best thermoelectric properties. We have successfully grown highly c-axis orientated $Ca_3Co_4O_9$ thin films using Pulsed Laser Deposition (PLD) technique on amorphous substrates, such as glass. High-resolution electron microscopy (HREM), electron energy-loss spectroscopy (EELS) and dispersive x-ray spectrometry (EDS) have been used to study the chemical composition and microstructure of the films. The detailed microstructure and growth mechanism of $Ca_3Co_4O_9$ thin films will be discussed.

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