

Pulsed Electron Deposition as a lower-cost alternative to Pulsed Laser Deposition

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Pulsed electron deposition (PED) as a method to deposit high-temperature superconducting oxides on metal tapes has only recently gained interest as a promising alternative to pulsed laser deposition (PLD). PLD is often credited with providing the highest-quality YBCO layers, in particular for thick films. PED is conceptually similar to PLD except that an energetic electron beam (rather than a laser pulse) results in the formation of an ablation plume, and that the excimer laser is replaced by a comparatively simple and cost-effective electron source. In this talk, a simple cost-model for PLD will be presented, and preliminary results on PED-deposited coated conductors deposited at ORNL on RABiTS will be shown. Deposition parameters in PLD and PED will be compared, along with the properties of the superconductors grown by the two techniques.

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