PVD growth of Bi thin films

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The superconducting properties of Bi arise in amorphous thin films grown under cryogenic conditions, which undergo irreversible recrystallization when annealed above approximately 20 K. Various methods can be used to grow thin Bi films, including electron beam evaporation for crystalline, highly resistive Bi films. It is suspected that their homogeneity and surface quality can be improved through HiPIMS due to the associated shift toward kinetically controlled growth. Additionally, a novel approach involves focusing a femtosecond laser on a Bi target to grow amorphous Bi films at cryogenic temperatures, allowing for the investigation of their recrystallization behavior.