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Design and Characterization of Self-Ions Bombarded Electron Beam Gun with High Flux and High Deposition Rates

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A self-ions bombarded electron beam source was designed and constructed. Metal films were deposited using this source with high ionization efficiency and high deposition rates. The structure of this source was so simple and a kind of EB-gun developed by Unvala, where electrons are focused by an electric field. This source was characterized in terms of electron bombardment current, the potential of the focusing electrode, and deposition rates. The cathode current and the focusing potential were varied in the range of 18-30 A and 1-5 kV, respectively.