Tailoring of thin film properties by (dual) ion beam sputter deposition

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Tailoring of thin film properties is of increasing technological interest. (Dual) Ion beam sputter deposition is a PVD technique for growing thin films with excellent properties. Furthermore, it provides the opportunity to tailor thin film properties.
Example 1, Ag films were grown under systematic variation of ion beam properties and geometrical parameters, and characterized concerning their electrical and optical properties. Systematic relations between process parameters and thin film properties are revealed, which are related to a change of structural properties (grain sizes) caused by changes in the energetic distribution of the film forming particles.
Example 2: SiO2 and TiO2 films were grown by dual ion beam sputter deposition with the aim to minimize the thin film stress. Here a second, assisting ion beam is directed onto the growing film, which introduces an additional energy entry. Doing so, the film stress is reduced considerably.

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