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**Quantitative correlation between intrinsic stress and microstructure of thin films**

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A critical review of the available literature on thin film intrinsic stress has generated a database with 111 entries representing 19 different metals deposited by evaporation. Although there is a wide range of experimental conditions, the data can be presented in a comprehensible way based on the mean free path of diffusing adatoms. This characteristic length  $L$  is calculated based on the deposition temperature, the melting temperature of the evaporant, and the deposition flux. The calculated strain as a function of  $L$  not only shows the trends in a quantitative way, but allows one to connect the data with the film microstructure as represented in structure-zone models. The proposed procedure appears to be applicable to amorphous metallic glass thin films (4 alloy systems, 29 entries) as well.

**Keywords**

intrinsic stress  
evaporation  
microstructure  
adatom mobility