

4.5.8. OPTIMIZATION OF X-RAY SOURCES BY MODELING

Deresch A., Jaenisch G.-R., Bellon C.,
Federal Institute for Materials Research and Testing (BAM), Berlin, Germany;
Warrikhoff A., Neuenhagen, Germany

A model is discussed which describes the generation of X-Rays in conventional tubes using tabulated Bremsstrahlung energy spectra depending on three variables: the target atomic number, the incident electron kinetic energy, and the fraction of energy radiated. The constructed model includes technical tube parameters like kilovoltage, target material and target angle to also account for self-absorption in the target, as well as radiographic parameters like filtering. Additionally characteristic radiation is included in the model. With the help of the simulation tool the influence of parameters can be separately studied. The validity of the proposed model is shown by measurements. This research is supported by the German Federal Ministry of Economics and Technology under contract MNPQ transfer II D 5-30/06.