

Numerical Simulation of Evaporation Processes in Electron Beam Welding

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Abstract

This paper describes an original method for indirect measurement of vapour pressure and temperature in the keyhole during electron beam welding. This method is based on the determination of the concentration of chemical elements in the vapour above the welding zone. A 2D model of diffusion processes with heat and mass transfer elements in the melt was built by taking this data into account. It includes the hydrodynamics solution, energy transfer and thermal conductivity equations for electron beam welding.