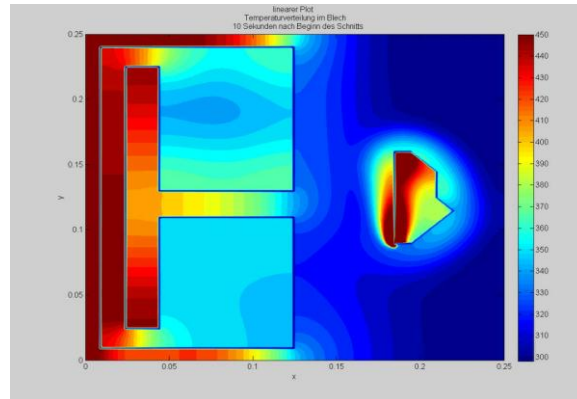


Semester Thesis

Simulation of Heat/Stress Distribution in Micro Drilling of Metal



Problem

Laser drilling using a nanosecond pulse width laser is a thermal process. The irradiated surface is melted and vaporized. The material around the working spot is heated as well. The introduced temperature gradients form stresses in the material which can lead to deformation of the workpiece. In previous work, a simulation for heat distribution in sheet metal has been developed. This may serve as a basis for the simulation.

Task

- Write a Matlab program to simulate the heat/stress distribution
- Find a way to optimize the heat distribution and reduce stress
- Conduct experiments to check validity of the model

Peripherals

In a current research project, we are experiencing problems with deformation of metal samples being drilled. The aim is to understand how these deformations can be minimized. The project will give the candidate insight in simulation as well as hands on experience with laser microprocessing. The work can be done in English or in German.

Start

WS 2011 or right away upon consultation

Contact

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