OTTO VON GUERICKE UNIVERSITÄT MAGDEBURG

WORKGROUP FOR MULTIPHAS FLOWS

Production from glas from SiO2 dust

Grant number

-

Project title

Calculation of the addition of SiO2 dust to glas production

Project leader and realized by

Dr. S. Horender

Project funding

Heraeus Tenevo GmbH

Short description of the project

For the production of optical fibers for telecommunication pipes from high-purity synthetic fused quartz are needed, which is gained in gas phase synthesis from SiCl4. For this purpose the so called Outside-Vapour-Deposition (OVD) is used, where SiO2 nano particles are produced in a burner and are deposited on a pipe shape rotating target. This projects goal is to calculate the movement and deposition of particles in order to predict the deposition rate under several conditions. For this purpose the structure of the flame is calculated with CFD and the particle trajectories are reconstructed with the Euler/Lagrange method. Several flame parameters as well as the parallel arrangement of multiple flames were tested and the calculated deposition rates matched the measured rates. Currently further studies on modelling particle generation, particle agglomeration, and improved turbulence modelling are conducted.

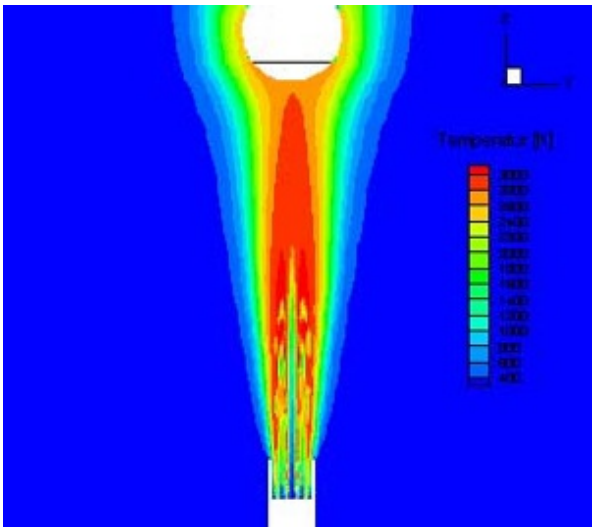

Photo 1: Temperature profile burner

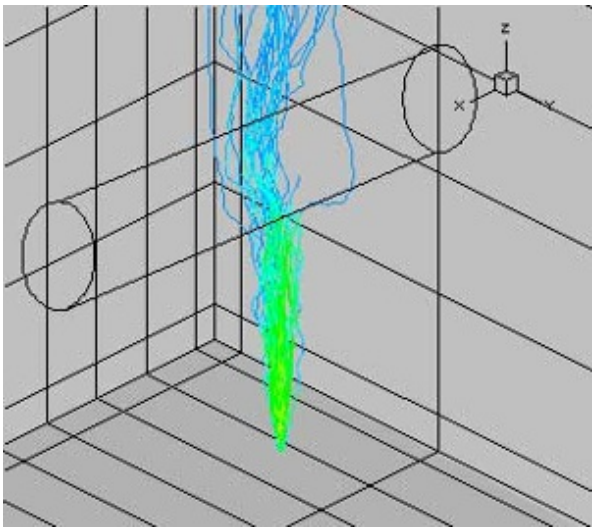

Photo 2: Trajectory of the SiO2 particles