

The Ultrasonic-Standing-Wave-Atomisation (USWA) represents an alternative method to produce powder coatings. This technology allows to atomise polymer melts into spherical powder particles. Needing less equipment cost intensive production steps and energy can be saved.

Additional knowledge regarding the mechanism of USWA are obtained by using *Mach-Zehnder-Interferometer*, high speed photography and laser diffraction to determine particle size distribution. The influence of electrostatic forces on the particle development are investigated by applying high voltage during the USWA.

The thesis is focused on an evaluation between the USWA, pneumatic, airless and high rotational atomisation. In the first approach test fluids without preheating are taken. With the aid of not heated test fluids the most important atomisation variables for USWA are determined as well as their sensitivity on the particle development. Aim was to investigate the influence of the viscosity as limiting parameter on the atomisation.

The airless as well as high rotational atomisation are technologies besides USWA which are in principal applicable to produce powder coatings from polymer melts. Atomising fluids with higher viscosity the airless technology can be used to atomise fluids with viscosity values up to 500 mPa*s and the high rotational atomisation can be applied even above these values.