

Modeling of a charge coupled device based optical tomographic instrumentation system for particle sizing

Abstract:

This research investigates the use of charge coupled device (CCD) linear image sensors in an optical tomographic instrumentation system used for sizing particles. Four CCD linear image sensors are configured around an octagonal shaped flow pipe for a four projections system. The measurement system used four CCD linear image sensors consisting of 2048 pixels with a pixel size of 14 by 14 μm . Hence, a high-resolution system is produced. Three mathematical models based on the effects due to particles, light sources and diffraction are discussed. The models are used to simulate the actual process in order to understand the limitations of the designed system.