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On the droplet deformation by internal colloidal particles TAKUYA TSUJI, TAKASHI SAKO, MASAHIRO SAKAI, TOSHITSUGU TANAKA, Osaka University — Spray drying of colloidal droplet is a promising method for the fabrication of nano-structured particles. It is know that thermal / hydrodynamic conditions of the process control the morphology of final particles. Addition to the surface tension and shear stress induced by the velocity difference between suspended droplet and carrier gas, internal colloidal particles are expected to have influence on the droplet shape. However, this is still not known well. In this study, we investigated the effect of colloidal particle loading, colloidal particle size and droplet size on the droplet deformation. Free-falling silica colloidal water droplet was observed by using the high speed camera. Colloidal particles, depending on the conditions, tend to enhance the instability and vice versa.

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