

# Visualization of thermo-chemical plumes

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In the Earth's mantle convective flow is induced not only by the thermal heterogeneity but also the compositional heterogeneity. The problem is that we can not clearly separate the thermal heterogeneity and the compositional one in the seismic imaging. So, we need interactive works between seismology and fluid dynamics. Here we will present our recent video images showing motion of thermochemical plumes in the labo experiments. The thermal structure is visualized by using TLC micro-particles illuminated by sheet light of laser. The compositional structure is visualized by LIF technique. Simultaneous measurement of thermal and compositional fields makes it possible to separate thermal buoyancy and compositional negative buoyancy. We present interesting video images showing disintegration of a starting thermochemical plume taken by a commercial HDV camera. The improved resolution of this camera enables detailed PIV analysis.