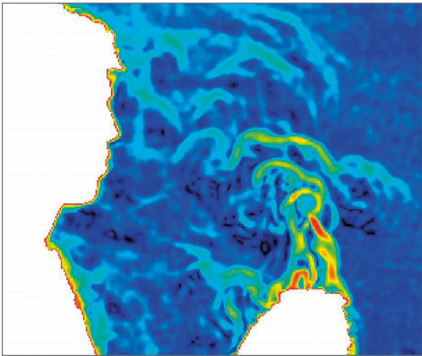
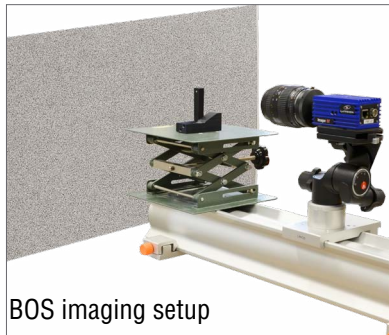


# Digital Schlieren Imaging for Flow Visualization

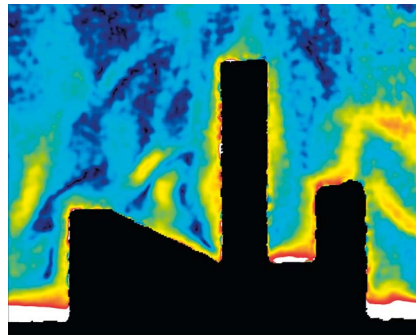
**BOS** imaging system based on digital image correlation



*BOS imaging of a thermal flow*



BOS imaging setup



*Thermal flow visualization (Schlieren image) around a heated building model*



Conventional knife-edge Schlieren system

## **BOS** imaging system features

- ▶ simple flow visualization technique on large scales without flow seeding
- ▶ advanced image correlation technique applied on background targets
- ▶ time-resolved Schlieren imaging using high-speed cameras
- ▶ **BOS** software module in **DaVis** for quantitative density (temperature) imaging in 2D and axisymmetric flows

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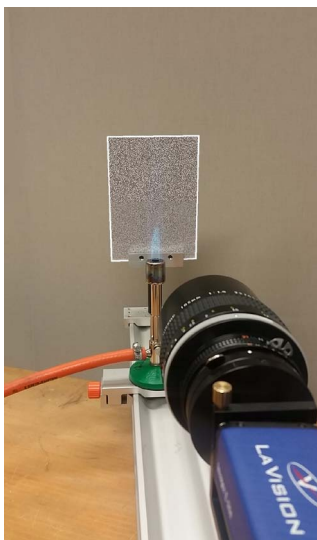
**Applications**

- ▶ localization of eddies, vortices and Schlieren
- ▶ mixing of gases and liquids
- ▶ thermal flows and flame temperature
- ▶ sound and shock waves
- ▶ gas leakage detection

**BOS imaging of an axisymmetric Bunsen flame**

For flame temperature measurements using **Background Oriented Schlieren imaging (BOS)**, a background pattern is placed behind the flame and recorded with and without the flame. The optical distortion of the pattern caused by the hot flame gases is recorded with a high resolution camera. The symmetry of this conical flame allows the numerical reconstruction of the absolute 3D temperature field of this Bunsen flame. This 3D-reconstruction module together with the DIC image processing engine is provided in our **BOS** software package.

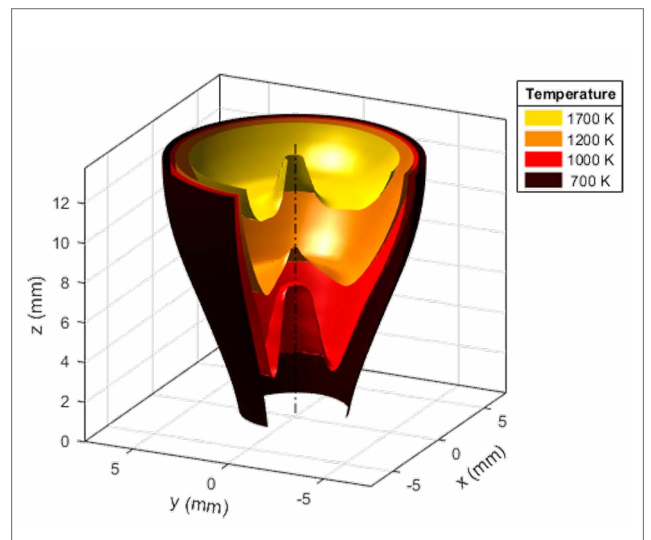
LaVision's **FlowMaster** PIV systems can be easily upgraded for **BOS** imaging adding the **BOS** software package.



*BOS imaging setup*



*Conical Bunsen flame*



*3D temperature field of the Bunsen flame*

Data provided by LaVision are believed to be true. However, no responsibility is assumed for possible inaccuracies or omissions. All data are subject to change without notice.

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