Portable Hyperspectral Imaging System(HSIS)

HSIS for combustion, laboratory, and field Applications

The HSIS enables spectrally- and spatially 2D imaging for emission from combusting flows, explosions, and thermal radiations. The sensor provides background-free measurements for chemiluminescent species concentration, F/A ratio, H_2O temperature in harsh environments.

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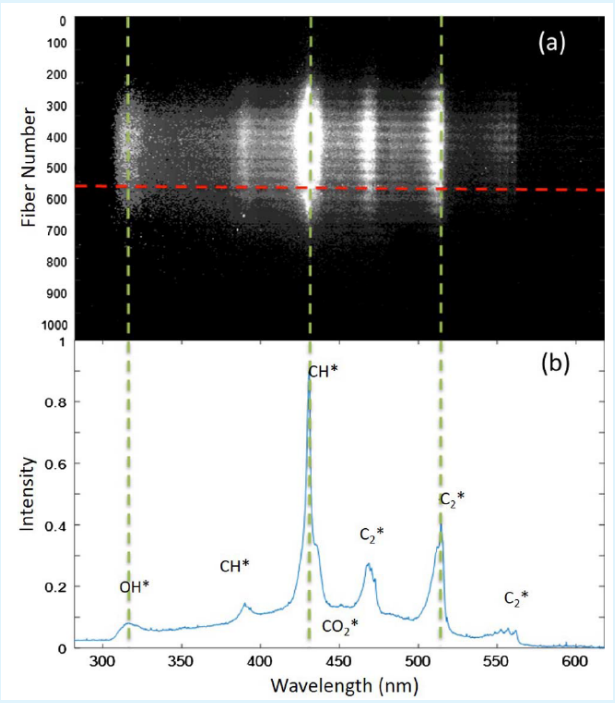
- **Spec sheets for all products available upon request.**

- Spatial, spectral, and temporal resolution of dynamic scenes
- Flexible fiber optics for remote location of imaging lens from sensor electronics
- Wide range of fore-optic options including microscope objectives, c-mount lenses, and telescopes
- Configurations available covering various wavelength ranges including UV/VIS, NIR, SWIR,

SYSTEM SPECS	
Spectral range, nm	300–2000 nm (exact spectral range depends on detector and imaging optics)
Spectral resolution, nm	2.5
Spatial resolution, pixel	32x32
F/Number	f/35
Channels	2 (UV-VIS & NIR–SWIR)
Repetition rate	10–10 ,000 Hz (depends on detector type)

Spectrally and Spatially Resolved Measurements



Spectrally and spatially resolved flame emission for premixed methane/air flame using HSIS. (a) Image recorded from spectrometer; (b) spectrum taken from Fiber No. 550 (spatial location is close to flame front).

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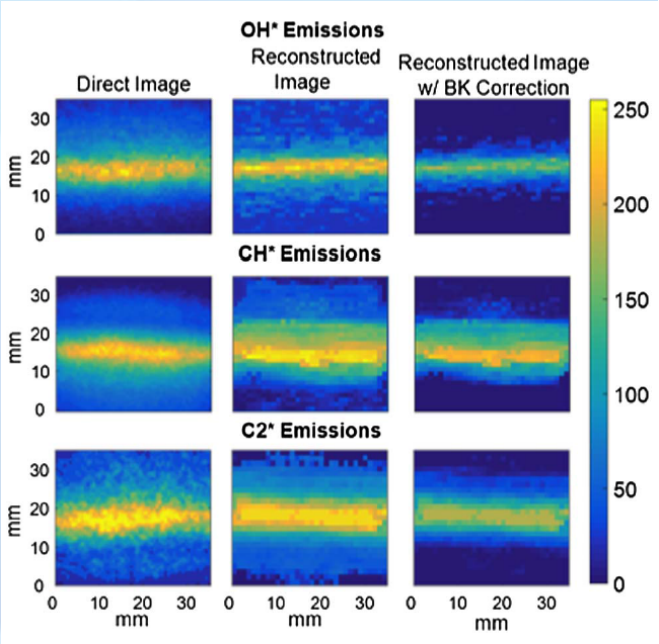
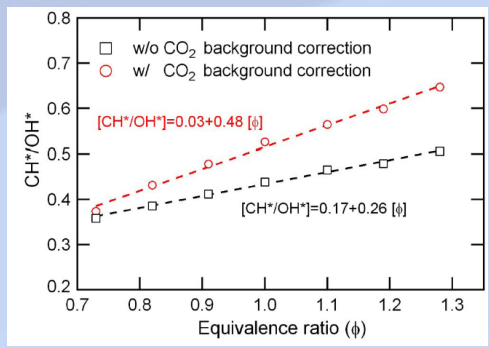
Background Corrected Chemiluminescence Measurements

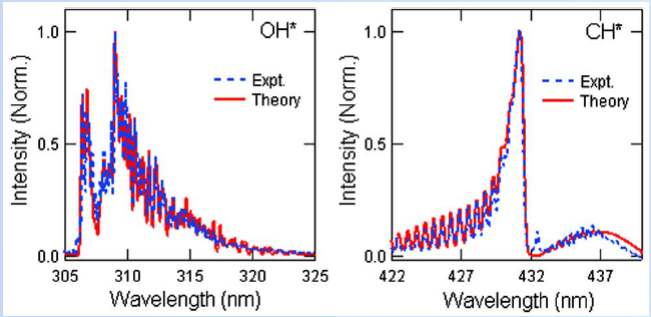


CO_2 background-removed 2D OH, CH, and C2 images of a Hencken flame at φ= 1 using HSIS.

Improved Chemiluminescence-based F/A ratio Measurements



Adjustable Spectral Resolution for Target Species



Reference:
P. Hsu, Appl. Opt. 56, 6029 (2017); highlighted as an Editor's pick in Applied Optics Journal.