

# OH PLIF MEASUREMENTS IN AN OPEN FLAME

APPLICATION NOTE PLIF-004 (US)

## Introduction

OH was measured in an open flame using the TSI Combustion Planar Laser Induced Fluorescence (PLIF) system.

## Experimental Setup

A photograph of the experimental setup can be seen in Fig. 1.



**Fig. 1** Experimental setup showing the TSI combustion PLIF system consisting of a dye laser (left), flat flame burner (center left), and camera and intensifier (right).

The flat flame burner was operated in a non-steady state configuration in order to capture transient differences in the OH production. The dye laser (Continuum ND6000) was operated using Rhodamine 590 dye in methanol.

The camera (Phantom V611) was fitted with an intensifier, UV camera lens, and filters appropriate for the emission wavelengths.

## Results

The dye laser was scanned through wavelengths from approximately 280.9 to 284.0 nm in steps of 0.002 nm. The grating was automatically adjusted during the scan. Wavelengths that demonstrated definite peaks in emission output were recorded. Peaks showing greater than normal emission sensitivity are highlighted in yellow and can be seen in Table 1.

Wavelength (nm)	
281.166	282.272
281.200	282.310
281.247	282.440
281.285	282.462
281.332	282.590
281.405	282.611
281.566	282.696
281.631	282.955
281.672	283.035
281.763	283.065
281.789	283.214
281.899	283.245
281.944	283.414
282.014	283.494
282.082	283.587
282.100	283.663
282.159	283.951
282.203	283.968

**Table 1.** Excitation wavelengths demonstrating emissions; *stronger emission wavelengths shown in yellow.*

A screenshot showing a raw image can be seen in Fig. 2. The image was taken with an excitation wavelength of 282.462 nm.

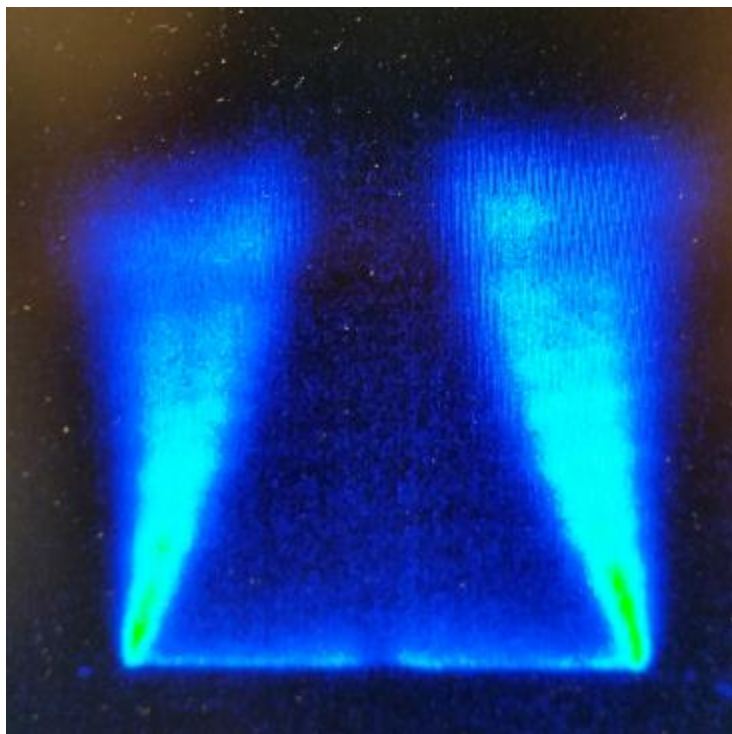


Fig. 2. Raw PLIF image of the flame showing the planar location of OH.

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