

Abstract Submitted  
for the GEC15 Meeting of  
The American Physical Society

**Nanosecond-gated laser induced breakdown spectroscopy in hydrocarbon mixtures** KAZUNOBU KOBAYASHI, Osaka Gas Co., Ltd., University of Notre Dame, MOON SOO BAK, Sungkyunkwan University, HIROKI TANAKA, Osaka Gas Co., Ltd., HYUNGROK DO, Seoul National University, University of Notre Dame — Nanosecond-gated laser induced breakdown spectroscopy have been carried out in four different hydrocarbon gas mixtures ( $\text{CH}_4/\text{CO}_2/\text{O}_2/\text{N}_2$ ,  $\text{C}_2\text{H}_4/\text{O}_2/\text{N}_2$ ,  $\text{C}_3\text{H}_8/\text{CO}_2/\text{O}_2/\text{N}_2$  and  $\text{C}_4\text{H}_{10}/\text{CO}_2/\text{O}_2/\text{N}_2$ ) to investigate the effect of gas species on the laser induced breakdown kinetics and resulting the plasma emission. For this purpose, each mixture that consists of different species has the same atom composition. It is found that the temporal emission spectra and the decay rates of atomic line-intensities are almost identical for the breakdowns in the four different mixtures. This finding may indicate that the breakdown plasmas of these mixtures reach a similar thermodynamic and physiochemical state after its formation, resulting in a similar trend of quenching of excited species.

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Date submitted: 15 Jun 2015

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