

Abstract Submitted  
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**Evaluation of Plasma Temperature from the OH Violet Molecular Emission System** HOSSEIN NASSAR, OULOUM AOUDE, Lebanese University-Faculty of Public Health section4 — The violet OH system ( $A^2\Sigma^+ - X^2\Pi_1$ ) molecular emission spectrum is frequently observed in plasma sources containing water it is a good tool for diagnosing plasmas containing this molecule. We have simulated the spectrum of (0,0) band of this system from 3064 Å for different rotational temperature. The method proposed permit to evaluate, by comparing point to point a real spectrum with the simulated one, temperature and apparatus function, approximated by the gauss function (the half-width at 1/e height). Moreover, it is shown, by noised spectra simulation, the influence of noise to signal ratio at the calculated temperature values. If the noise to signal ratio is about 10% we found an error of 6% at temperature 3000K and 10% at 6000K. This method has been used to determine the combustion temperature from a real spectrum recording in Polymethyl methacrylate rocket plume taken 0 mm from the nozzle of fuel grain. The rotational temperature of about  $3000 \pm 350$  K, has been found and noise to signal ratio is about 20%.

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