



**SDI FINAL EVALUATION FORM 1.1**

**PART 1:**

Journal Name:	<a href="#">Physical Review &amp; Research International</a>
Manuscript Number:	2013_PRR1_6986
Title of the Manuscript:	Measurements of absolute atomic oxygen density by two-photon absorption laser-induced fluorescence spectroscopy in hot air plasma generated by microwave resonant cavity

**PART 2:**

FINAL EVALUATOR'S comments on revised paper (if any)	Authors' response to final evaluator's comments
<p><b>The authors were very pro-active in implementing all of the requested revisions. The only suggestion would be to include the collisional deactivation discussion in the paper. The discussion, as provided to the reviewer is:</b></p> <p>The quenching of excited O atoms by ground state O atoms is neglected if the atomic oxygen is supposed to be a minority species. Anyway, the upper limit of value of the quenching rate constant was estimated to be <math>0.82 \cdot 10^{-11} \text{ cm}^3\text{s}^{-1}</math> in an oxygen plasma jet having a sufficiently high and controllable degree of dissociation (G Dilecce, M Vigliotti1 and S De Benedictis]. Phys. D: Appl. Phys. 33 No 6 (21 March 2000) L53-L56 "A TALIF calibration method for quantitative oxygen atom density measurement in plasma jets").</p> <p>Thus, in our case, the radiative time decay of reaction remains shorter than the collisional time decay reaction.</p> <p><b>The authors may want to include this in the paper to further bolster their claim that collisional deactivation is not that important.</b></p>	<p>The referee is right, the author reply was not added in the previous revised manuscript. Therefore, the following comment is added in the new revised version in order to bolster the low effect of collisional deactivation (please see yellow highlighted lines 259 to 266 and the reference 8):</p> <p>"It is noteworthy that the quenching of excited O atoms by ground state O atoms can be neglected whether the atomic oxygen is lower than molecular background nitrogen and oxygen. Furthermore, the upper limit of the quenching rate constant of excited oxygen atom was estimated to be quite low (<math>0.82 \cdot 10^{-11} \text{ cm}^3/\text{s}</math>) in an oxygen plasma jet having a sufficiently high and controllable degree of dissociation [8]. Thus, in the present plasma column, the radiative time decay of reaction remains shorter than the collisional time decay reaction. This means that the fluorescence signal and the resulting estimation of oxygen density are not really affected by such collisionnal quenching"</p> <p>The authors would like to thank again the referee for this constructive suggestion.</p>