



SDI Review Form 1.6

PART 1:

Journal Name:	Physical Review & Research International
Manuscript Number:	2013_PRRI_3906
Title of the Manuscript:	Determination of the optimum design and extraction optics for a glow discharge Ion source

General guideline for Peer Review process is available in this link:

(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)

- This form has total 7 parts. Kindly note that you should use all the parts of this review form.



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PART 2: Review Comments

	Reviewer's comment	Author's comment <i>(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
<u>Compulsory</u> REVISION comments	<p>1. The article according to its title is devoted to optimization of a design and ion optics of an ion source on the basis of the glow discharge. But the explanation of a choice of a design of the discharge system is completely absent completely, though it is known, that the optimum choice of the sizes of the cathode allows to realize the hollow cathode effect and to lower the operating pressure the discharge.</p> <p>2. A real arrangement of an extractor concerning plasma boundary is not clear from fig. 1.</p> <p>3. At accelerating voltage of some kV it is necessary to consider a secondary electron emission from a collector to access the beam ion current correctly.</p> <p>4. Under conditions when working gas is nitrogen and a low discharge currents are used the ion beam consists mainly from single charged molecular ions that is not considered during the modelling.</p> <p>5. Very simplified statement of truisms is given in introduction instead of formulating the aim of the given research and its features. The final results of experiments and modelling are trivial.</p> <p>6. Research of influence of a beam space charge on its angular divergence are carried out at constant radius of curvature of a plasma meniscus. It is absolutely incorrect, because just the form of a plasma meniscus and its movement define in the main the form of an ion beam.</p>	
<u>Minor</u> REVISION comments	<p>There are a lot of discrepancies in formulations:</p> <p>1. The ion beam is not extracted from the plasma</p>	



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	<p>boundary (41), but ions are taken, whereas the ion beam is formed in an accelerating gap of the ion optics.</p> <p>2. Position of plasma emission boundary (40) corresponds to area in which pressure of an electrostatic field corresponds to the pressure of plasma.</p> <p>3. Plane copper cathode (62) is not really the electrode of glow discharge, in fact the the fed gas tube works as the discharge cathode.</p>	
<u>Optional/General</u> comments	<p>On my opinion the research is not original and has low scientific interest. The article title mismatches its real maintenance. Calculation of ion optics is carried out without taking into account the real mass composition of the beam. The assumption that the plasma meniscus keeps it's shape is too rough.</p>	

Note: Anonymous Reviewer