



SDI Review Form 1.6

PART 1:

Journal Name:	International Research Journal of Pure and Applied Chemistry
Manuscript Number:	2012_IRJPAC_2622
Title of the Manuscript:	Comparison of Biophysical and Radiological Responses of Bio-test objects to Pulsed and Continuous X- and Neutron-Irradiations

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 9 parts. Kindly note that you should use all the parts of this review form.



SDI Review Form 1.6

PART 2: Review Comments

	Reviewer's comment	Author's comment (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)
Compulsory REVISION comments	This paper abounds in interesting information. However I am afraid the context is not appropriate up to the point to be misleading, especially concerning those questions related to clinical application of radiations. For example (in the introduction), neutron-therapy is nowadays totally abandoned, and if it is true that the few remaining "believers" (Seattle, Detroit and iThemba) prescribe it in 20 % of the cases, it is totally wrong to suggest that it is prescribed for 30% of (the whole) of oncologic patients and that it allows 20% enhancement of the treatment results. In other respects, it is not clear how devices of the type "Dense Plasma Focus" could be used in radio-diagnostic or radiotherapy taking into account their	We improved this part of the text according to recent data. Beside the centres mentioned by the reviewer there are the following clinics working at the moment with BNCT: Snezhinsk, Tomsk, Obninsk (RF), reactor FRM-II (Germany). It is difficult to agree with the last statement of the reviewer – in the above centres it is the fixed facts that the effectiveness of neutron (gamma-neutron) therapy for a number of cases in nosology (tumours of salivary glands), head and neck, mammary glands was higher by 20-40% compared with the photon therapy indeed. Additionally we ask kindly the reviewer to look for our recent paper where we have discussed opportunity probably afforded by the DPF for the <i>selectivity increase</i> at neutron therapy: G. Giannini¹, V. Gribkov, F. Longo, M. Ramos Aruca and C. Tuniz, Opportunities afforded by the intense nanosecond neutron pulses from a plasma focus source for neutron capture therapy and the preliminary simulation results, <i>Phys. Scr.</i> 86 (2012) 055801 (9pp) doi:10.1088/0031-8949/86/05/055801 That is why namely we made these experiments – we are trying to find regions (dose – dose power ranges) where the <i>low-dose diagnostics</i> or <i>per contra</i> the <i>low-dose</i>



SDI Review Form 1.6

	huge dose rate (dose power) that is by 10 orders of magnitude greater than those used in therapy. In addition, the dosimetry of such sources of radiations raises a problem by itself, question which is not approached here and which is one of the most important problem for (pulsed) high-LET radiations. In this view, we know that the dose accuracy required in radiation therapy is 3.5%, what withdraws much clinical interest to the biological results which are not related to absorbed doses of that precision. Still in the clinical field, the radiobiological effect of the concerned type of radiations have been indeed determined for biological systems and doses that are relevant to radio-diagnostic (i.e. chromosome aberration in lymphocytes), but not to radiation therapy. Besides, the material and method section is very vague and incomplete and - apart from aberrations - deals with biological system (bio-test objects) whose relevance is not clear. In conclusion I would say that this article is more a technical apologia for the Dense Plasma Focus (DPF) device than a scientific study of its technical-biological performances.	therapy would be applicable safely. Dosimetry is a real problem here. But we are moving in the direction of increasing our time resolution (now it is on the level of 0.276 ns) and precision of absolute dose measurements. For the last task we are using several absolutely calibrated neutron activation detectors (two of them are mentioned in the paper and their results are discussed comparatively. But we are working also with 5 other element – Be, Cu, etc.). We have published about 10 papers on this point, and it is impossible neither to include this material into this text, nor even briefly discuss it with a proper number of references. Relevance of our bio-test objects were discussed in our previous papers. See references: [1, 2, 5, 9-13]. The part of the text devoted to the DPF device is really not small. But we described it in detail <i>namely because this device is relatively unknown</i> and we obtained explicitly with this setup (having unprecedented power flux density!) the <i>non-trivial results</i> if one compare them with all other data gained with another
--	--	--



SDI Review Form 1.6

	Instead of providing a ragbag of information, I would suggest to the authors to focus themselves on a precise question and to bring information that are perfectly and totally documented in their relevant context.	sources used by us in this work. This remark of the reviewer sounds even more surprising that just a few lines before the reviewer reproached us with the fact that “method section is very vague and incomplete”! We believe that we focused in this work on the precise question: Is there any strong difference at the “Comparison of Biophysical and Radiological Responses of Bio-test objects to Pulsed and Continuous X- and Neutron-Irradiations” or no, and we are of the opinion that we have found the answers: - Practically no - for neutrons in the range of $P_n = 10^{-2} \dots 10^{+9}$ Gy/min - Yes - for X-rays for certain objects and on the upper level of the range of applied $P_x: 10^9 \dots 10^{11}$ Gy/min., which are documented on the modern world-accepted level.
<u>Minor</u> REVISION comments		
<u>Optional/General</u> comments		