



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

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- This form has total 9 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	1) The line 65 mention the boron neutron capture synovectomy and presents as reference (JC Yanch, 1996). Is this a thesis? I think it would be better, if possible, to present some paper or any indexed publication as a reference. 2) Lines 72 to 74: This paragraph should be rewritten. I don't understand the meaning. 3) Lines 81-88: Authors should present two or three references considered by them as the fundamental works in the field of "radioenzymology". 4) Lines 151 to 159: This paragraph is in my opinion quite ambitious. Especially when the authors said:	We agree and now we have introduced the proper reference [4]. We agree and we have rewritten this paragraph as follows: "Some problems are poorly studied here. Such issues relate to dosage, obtained by the intermediate layers of organism when a deeply located tumor is under irradiation, in particular at short neutron pulses. It is also connected with the neutron scattering and penetration within organism at the combined irradiation modes (X/gamma-rays and neutron irradiation, fast/epithermal/thermal neutron irradiation, etc.)." We agree, and we have introduced here the references [7 – 13] with the corresponding explanations: "Among fundamental directions of radiation biology development a discipline named "radioenzymology" [7 - 13] as well as its branch "pulsed radioenzymology" born and developed in the last decades of previous century occupies an important place... It is especially important in the case when pulse duration of radiations is short compared with reciprocal processes (e.g. with time intervals of physical-chemical, chemical or bio-physical stages taking place at the water radiolysis)." Here we have to clarify the situation. The operating voltage "250 kV" is a misprint: it must be 25 kV. We made this correction.



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	“Radiation chamber of a miniature generator may be inserted inside a patient’s body”. Is there any reference about an application like this?? I remember that plasma focus devices works with high voltage, let said between 10 and 250 kV (as the authors mentioned). It is not easy to me to imagine how a physician can use a Plasma Focus INSIDE a patient. They also produce an intense EM pulse capable of tilt several electronic devices around the facility. It is not clear to me that the proposed application can be easily achieved, especially in a hospital or in the presence of other electronic apparatus. I suggest to include here some references, if exist, about the mentioned applications. 5) In the line 166 authors mention a peak of X-ray in 8.979 KeV (this should be keV instead of KeV) and 150 keV from DPF. The origin or cause of these X-ray should be mentioned. 6) In the work the authors mention fusion neutrons of 2.45 and 14 MeV. They should mention the reactions by which these neutrons are produced, i.e. D-D and/or D-T fusion. 7) The authors should explain better why they are using the product of dose and dose power (DxP). Is there any model to explain why this parameter is the most appropriate for this study?	The DPF device of the finger-sized dimensions having the <i>grounded</i> (zero potential) external casing enveloped into an insulator shell is safe. EM pulse is produced <i>inside the metallic DPF chamber</i>, and an additional (second to the external cathode) screen (Faraday cage) will prevent escaping of e/m noises from the chamber. This is a pure technical problem. It was resolved by us in 80-s in the experiments with measurements of the very weak infra-red pulses irradiated by DPF (amplitudes of electric signals from the IR detector were on the level of a few hundred μV). There are no <i>experimental</i> works with real patients on this point. But there are several published proposals on this application made by different authors (e.g. on use e-beam and X-rays generated in a miniature DPF in brachytherapy – see e.g. a new ref. [15]). So our team is not unique in this meaning. But of course special investigations of this application must be provided before its implementation. Thank you. We made also here a misprint. Now we have corrected the data and presented spectra of DPF itself and behind a copper foil (see new Fig. 3 <i>a</i> and <i>b</i>) with explanations. Done. In fact there are neither physical, no bio-chemical models explaining this phenomenon. We found analogy (similarity) of the approximate independence of reaction of materials (from inorganic ones like metals till living tissues) on change in dose and dose power provided that their product is preserved constant. We have mentioned about it in the paper with the proper references.
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	8) Figure 3a and 3b. Is not clear from the figures or from the body of the paper the reason of using the filters of Cu or Al. The legend in the figures is confusing. In my opinion more space in the body of the paper should be dedicated to explain the figures, especially what I mentioned about the use of the filters. 9) The authors should explain why in their opinion the activity in Figures 3a and 3b is greater than 100%. What is the meaning of that result? 10) I strongly suggest to the authors to improve the writing of the article to get a more continuous reading and to include a section with "Conclusions" to emphasize the goals of the work.	Now we have provided more clear explanation in the text. The figures are corrected and improved. It means that after irradiation of certain enzymes <i>in vitro</i> in certain conditions their catalytic activity increases, i.e. becomes higher than that was <i>before</i> irradiation (which was marked as 100%). This is a well-known fact that is usually observed with metal-containing enzymes. The nature of the phenomenon is not absolutely clear at the moment. We tried to do here our best, and we have included the "Conclusions" chapter.
<u>Minor</u> REVISION comments	1) Line 51: in my opinion "circa 70% of oncologic...". Authors need to provide a reference to back-up this phrase. 2) The quality of figures 3a and 3b should be improved.	Done, ref. [1]. See also our answers to the reviewer No. 4. We improved a quality of the figures.
<u>Optional/General</u> comments		