

Response Letter to the Reviewer's Comments

Reviewer 1's comments:

1. Could you please to describe why the conventional vulcanization has disadvantages at high temperature on ageing properties?

Response to comment 1:

We are sorry that we used confusing words here. Therefore, we changed the sentences “However, high pressure and high temperature are necessary during the vulcanization process. These conditions lead to aging problem at high temperature.” to “However, heating process is necessary during the vulcanization with sulfur. This condition can lead to degradation problem of the rubber product when it is in high temperature environment again after the forming process [1]” in lines 6-8 in section 1. We also added the reference [1] that presented the information about this statement.

2. Just revise the sentence as is “The accelerated electron beams with variable energies are produced from a 4 MeV RF linear accelerator “ to “The varied electron beams are produced by a 4 MeV RF linear accelerator.”

Response to comment 2:

We agree to the reviewer to revise the sentence as suggested.

3. What do you mean “they have mean energies in range of 0.70-4.02 MeV?” Is the energy threshold in your simulation?

Response to comment 3:

Our accelerator can produce electron beams with adjustable energy in this energy range. For the beam dynamic and Monte Carlo simulations presented in this paper, we chose to study the beams with the mean energies from 0.70 to 4.02 MeV with energy step of about 0.5 MeV. We included this sentence in lines 3-4 in section 2. The results in Figures 1 and 3 are only the examples of the beams with low and high energy. To present the information for other beam energies, we added the simulation results for all beam energies in Table 1.

4. How many particles are used in the GEANT4 simulation? I a bit confuse because of the limitation on time consuming for computation, the particles is only 10^5 particles as you wrote in the paper. But in each micro-bunch consists of 2.06×10^8 electrons so the depth dose simulation by using GEANT4 shown in figure 4 is computed for the single micro bunch, isn't it.

Response to comment 4:

The results in Figures 4-6 were computed for a macro-pulse, which composes of about 12,000 micro-bunches. For clearer explanation, we moved the sentences related to the number of electrons in a macro-pulse from section 3 to section 2 and modified the sentences as written in lines 7-15. The description and reference for the reason why can we use 10^5 electrons in GEANT4 simulation are also included in these lines. Moreover, we added the words “per macro-pulse” in the caption of Figures 3-5 to highlight that these results are calculated for one macro-pulse.

Editor's comments:

Please also note, according to the SPC2018's policy, that each paper in this proceeding much be within 4 pages. Therefore, for manuscript (correct IOP template) with more than 4 pages, in an addition to 2,500

Baht page-charge, there will be additional 500 Baht for any single additional page (even there is only a single character on that page).

Response to the editor's comment:

We would like to publish this paper with 5 pages for more complete information that we added in this revised version. Therefore, we are happy to pay the publication fees of $2,500 + 1 \times 500 = 3,000$ Baht.