

Review of: "Neutronic Chain Reactions for Polonium-210 Production"

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Potential competing interests: No potential competing interests to declare.

In this manuscript, the author presents experimental evidence of a chain reaction occurring in a neutron irradiation setup containing bismuth beryllium acetate. The paper is commendably written and well-organized, with appropriate referencing and clear citation of figures and tables throughout the text.

Technical Comments:

Page 6, Subsection 2.4: The location of the Geiger-Muller counters on the neutron irradiation setup lacks a clear description. Enhancing clarity could be achieved by including specific details about where these counters were precisely placed.

Page 6, Subsection 2.4: While the proximity-count method was employed to confirm the presence of polonium-210, the density of the medium is notably absent. Including this crucial information is essential for readers intending to replicate the study's results.

Page 6, Subsection 2.4: It would be pertinent to explicitly state the Beth-Bloch formulation and its parameters for further correlation with the graph presented in Figure 6.

Page 11, Subsection 3.3: During the decay process, polonium-210 could potentially absorb a neutron and undergo undesired reactions, contingent on the isotope neutron absorption cross-section. Has the author evaluated the potential reaction rate of this process? This consideration is vital, as it could influence the concentration of polonium-210 and, consequently, the neutron chain reactions.

Page 15, Subsection 3.4: The decay of Am-241 into Np-237 through alpha decay, characterized by an energy of approximately 5.5 MeV, closely resembles the alpha-decay energy associated with Po-210. How can the author ensure that the energy peak illustrated in Figure 13 does not encompass the alpha-decays of Am-241?