

## ***Interactive comment on “Baddeleyite microtextures and U-Pb discordance: insights from the Spread Eagle Intrusive Complex and Cape St. Mary’s sills, Newfoundland, Canada” by Johannes E. Pohlner et al.***

**Anonymous Referee #2**

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The manuscript "Baddeleyite microtextures and U-Pb discordance: insights from the Spread Eagle Intrusive Complex and Cape St. Mary’s sills, Newfoundland, Canada" dealt with an very important issue about the U-Pb age discordance of Baddeleyite and implications for the U-Pb age interpretation. The authors provided very detailed petrological and mineralogical evidences for the occurrence of the baddeleyite and then conducted SIMS and TIMS analyses of the U-Pb ages to discuss the possible mechanisms for U-Pb discordance and to constrain the ages of the studied samples. However, there are several weaknesses about the manuscript at its present style in-

C1

cluding data precise and geological interpretation. And I can't recommend it to be accepted at present version. Major comments: 1. The authors presented different sessions for the SIMS U-Pb analyses, which are the important basis for the further discussion. The data are not in enough high quality to do such things, including the discordance U-Pb ages and the inheritance of xenocrystic zircons. The precisions of some data are even lower than those reported in 1993. The selection of  $^{206}\text{Pb}/^{238}\text{U}$  or  $^{207}\text{Pb}/^{206}\text{Pb}$  ages to represent the studied samples are very arbitrary. The high common Pb abundances are also strange for most zircon and baddeleyite grains that have high U- contents, which might be resulted from the analyses of the alteration domains. For samples FP6D and S2E, the  $^{207}\text{Pb}/^{206}\text{Pb}$  ages are essentially the same within the analytical errors and could be used with caution to discuss the linear correlation with the percentage of discordance. 2. The interpretation of secondary baddeleyite and xenocrystic zircons are not very solid based on the presented evidences: What is unique for sample S2C to transform zircon into secondary baddeleyite under low metamorphic conditions, which should be clearly addressed. In sample FP12A, the  $^{206}\text{Pb}/^{238}\text{U}$  ages are not precise enough to draw an important conclusion for such an unreported phenomenon; No resorption textures can be observed to support the authors' interpretation. 3. The ages of the studied samples are not refined from the present study but mostly cited from previous results to the selection.

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C2