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Structural control on the emplacement of contemporaneous Sn-Ta-Nb mineralized LCT pegmatites and Sn bearing quartz veins: Insights from the Musha and Ntunga deposits of the Karagwe-Ankole Belt, Rwanda

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Rapid communications

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2	Structural control on the emplacement of contemporaneous Sn-Ta-Nb
3	mineralized LCT pegmatites and Sn bearing quartz veins: insights from the
4	Musha and Ntunga deposits of the Karagwe-Ankole Belt, Rwanda.
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13	
14	Abstract
15	The Nb-Ta-Sn pegmatites and Sn quartz veins of the Rwamagana-Musha-Ntunga area in eastern
16	Rwanda are part of the Mesoproterozoic Karagwe-Ankole Belt. These commodities are on a regional
17	scale spatiotemporally associated to the early Neoproterozoic fertile G4-granite generation. Although a
18	transition from the lithium-cesium-tantalum pegmatites to cassiterite-microcline-quartz veins has
19	been observed in the Rwamagana-Musha-Ntunga area, the structural control and the paragenetic
20	relationship between the mineralized pegmatites and the Sn bearing quartz veins is largely unknown.
21	Consequently, this study investigates the occurrence of pegmatites and quartz veins and the structural
22	and lithological controls on their emplacement.
23	The metasediments in the area are affected by a regional compressional regime with a shortening
24	direction oriented N70E, which resulted in a N20W-oriented fold sequence. The Lake Muhazi granite
25	is present in center of the Karehe anticline. The structural orientations of pegmatites and quartz veins
26	show that two important factors control their emplacement. The first control is the reactivation of pre-
27	existing discontinuities such as the bedding, bedding-parallel joints or strike-slip fault planes. In view
28	of the regional structural grain in the Rwamagana-Musha-Ntunga area, this corresponds with abundant
29	N20W-oriented pegmatites and quartz veins. The reactivation is strongly related to the lithology of the
30	host rocks. The Musha Formation, which mainly consists of decimeter- to meter-scale lithological
31	alternations of metapelite, metasiltstone and metasandstone, represents the most suitable environment
32	for bedding reactivation. This is reflected in the predominance of bedding-parallel pegmatites and
33	quartz veins hosted by the Musha Formation. Strike-parallel joints were mainly observed in the

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