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supporting information:

Highly crystallized glass-ceramics from high content gold tailings via one-step direct cooling method

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The previous sample formulation without nucleating agent and the sample XRD patterns.

Table S1: Composition of tailings glass-ceramics (wt.%).

`	1	2	3	4
Gold tailings	80	70	60	50
SiO_2	0	7	14	21
Al_2O_3	0	1	3	4
CaO	15	16	16	18
Li_2O	1.5	2	3	3
MgO	2	2	2	2
ZnO	1.5	2	2	2

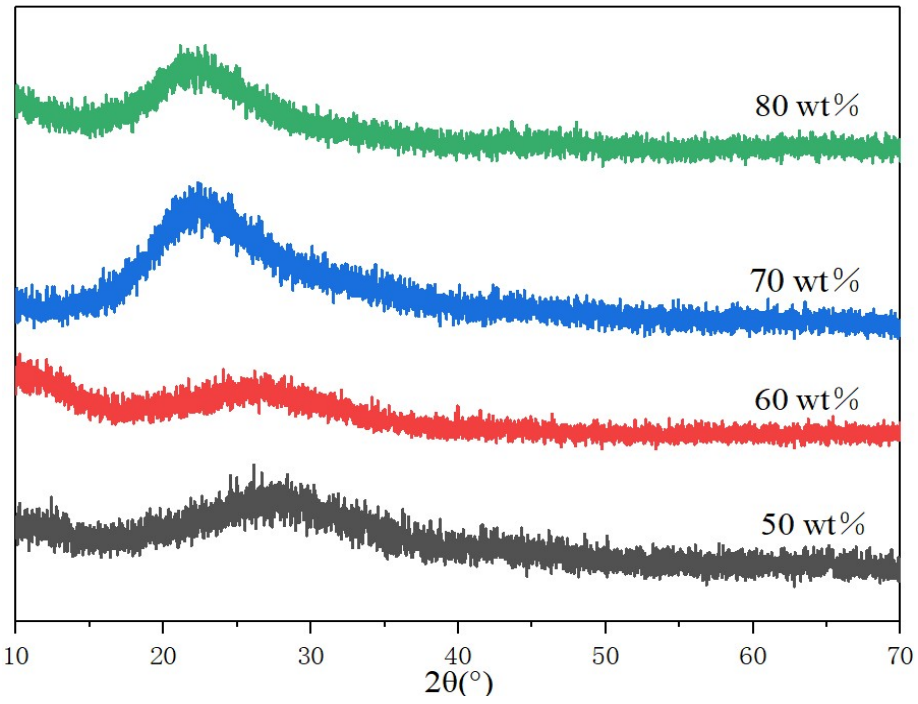

Fig. S1. XRD patterns of samples with different tailings additions at 1000 °C

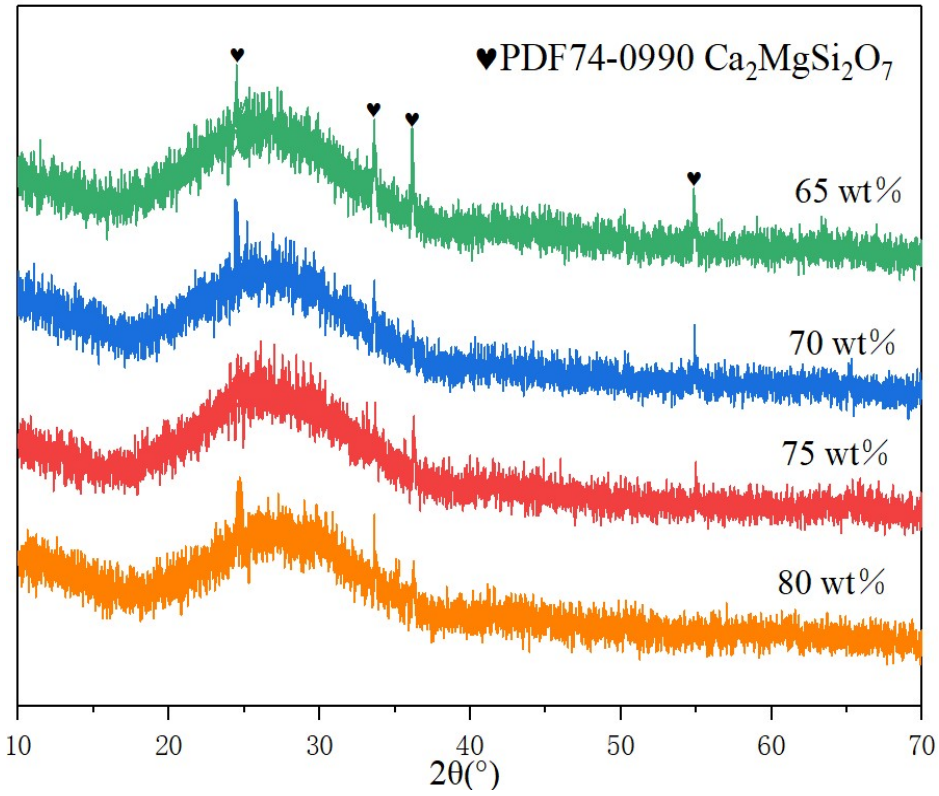

Fig. S2. XRD patterns of glass ceramics crystallized at 1000 °C under different addition

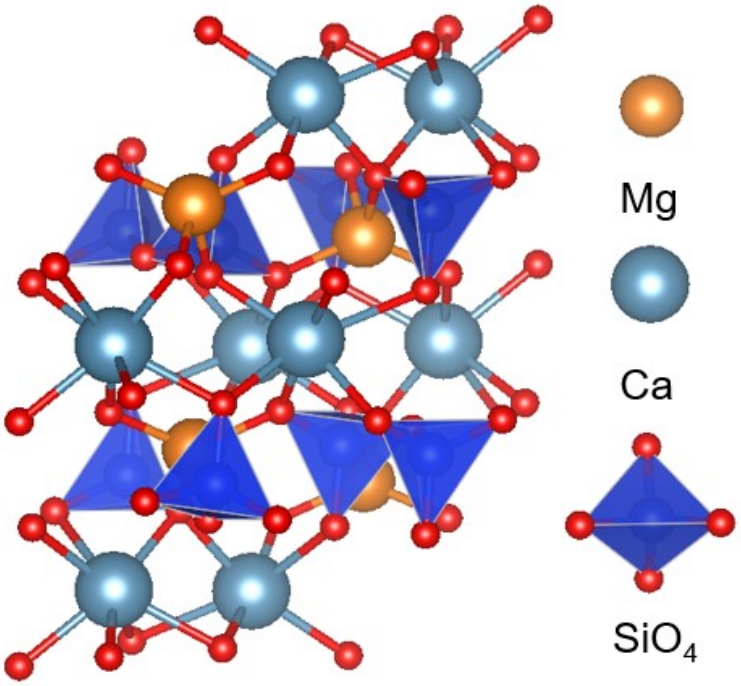

Fig. S3. The crystal structure of Akermanite phase

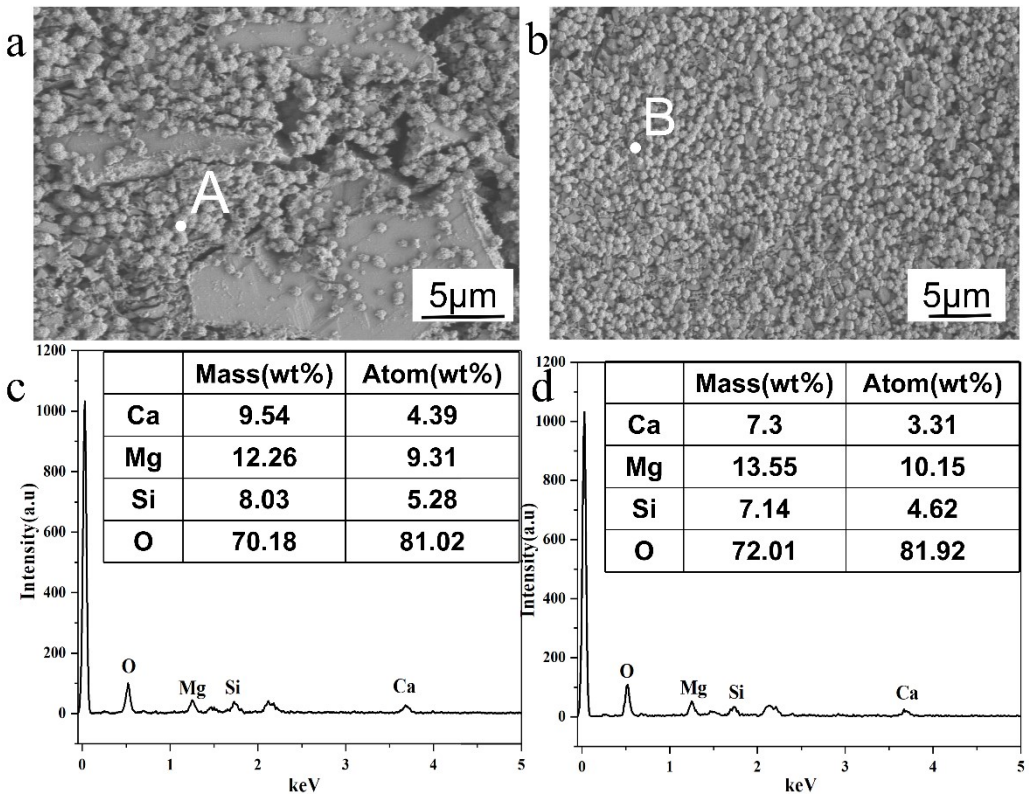

Fig. S4 SEM images of (a) 80 wt% and (b) 60 wt% tailing addition glass-ceramics samples at 950 ℃, EDS analysis of (c) A and (b)B.