Table S1. Geothermal temperature scale and cationic geothermal temperature scale formula of SiO_2 [45,55,56].

Geothermometer	Calculation formula	Scope of application(℃)	Reference
Chalcedony(no loss of steam)	$t = \frac{1032}{4.62 - \log SIO_2} - 273.15$	100-180	[55]
Chalcedony(maximum steam loss)	$t = \frac{1264}{5.31 - \log SIO_2} - 273.15$	100-180	
Quartz(no loss of steam)	$t = \frac{1309}{5.19 - \log SIO_2} - 273.15$	0-250	
Quartz(maximum steam loss)	$t = \frac{1522}{5.75 - \log SIO_2} - 273.15$		
Na-K-Ca	$t = \frac{1647}{\log\left(\frac{Na}{K}\right) + \left(\beta \log \frac{\sqrt{Ca}}{Na} + 2.06\right) + 2.47} - 273.15$ β=4/3(when t<100 °C) or β=1/3(when t>100 °C)	0-250	[56]
Na-K	$t = \frac{856}{\log\left(\frac{Na}{K}\right) + 0.857} - 273.15$	25-250	
K-Mg	$t = \frac{4410}{13.95 - \log\left(\frac{k^2}{Mg}\right)} - 273.15$	50-300	[45]

Table S2. Relationship among temperature, enthalpy and SiO_2 content

T/°C	Enthalpy/ ($J \cdot g^{-1}$)	SiO_2/($mg \cdot L^{-1}$)	T/℃	Enthalpy/ ($J \cdot g^{-1}$)	SiO_2/($mg \cdot L^{-1}$)	T/°C	Enthalpy/ ($J \cdot g^{-1}$)	SiO_2/($mg \cdot L^{-1}$)
50	50	13.5	150	151.0	125.0	250	259.2	486.0
75	75	26.6	175	177.0	185.0	275	589.0	614.0
100	100.1	48.0	200	203.6	265.0	300	321.0	692.0
125	125.1	80.0	225	230.9	365.0	-	-	-