Supporting Information

Figure S1 Electron backscatter image and EDS spectrum of $Na_2Tb_{1.08}Ca_{2.92}Si_6O_{18}H_{0.8.}$

Figure S2 Thermal ellipsoid plot (50％ probability) of the asymmetric unit of $Na_2Tb_{1.08}Ca_{2.92}Si_6O_{18}H_{0.8.}$

Figure S3 Gaussian deconvolution of Tb_{4d} level spectra.

Figure S4 IR spectrum of $Na_2Tb_{1.08}Ca_{2.92}Si_6O_{18}H_{0.8.}$

Figure S5 TG curve of $Na_2Tb_{1.08}Ca_{2.92}Si_6O_{18}H_{0.8.}$

Table S1 Atomic coordinates (x, y, z) and equivalent isotropic displacement parameters (U(eq)) for the $Na_2Tb_{1.08}Ca_{2.92}Si_6O_{18}H_{0.8}$ compound

Table S2 Selected bond lengths (Å) and angles (°) for the $Na_2Tb_{1.08}Ca_{2.92}Si_6O_{18}H_{0.8}$ compound

Table S3 Bond Valence (v.u.) for the $Na_2Tb_{1.08}Ca_{2.92}Si_6O_{18}H_{0.8}$ compound

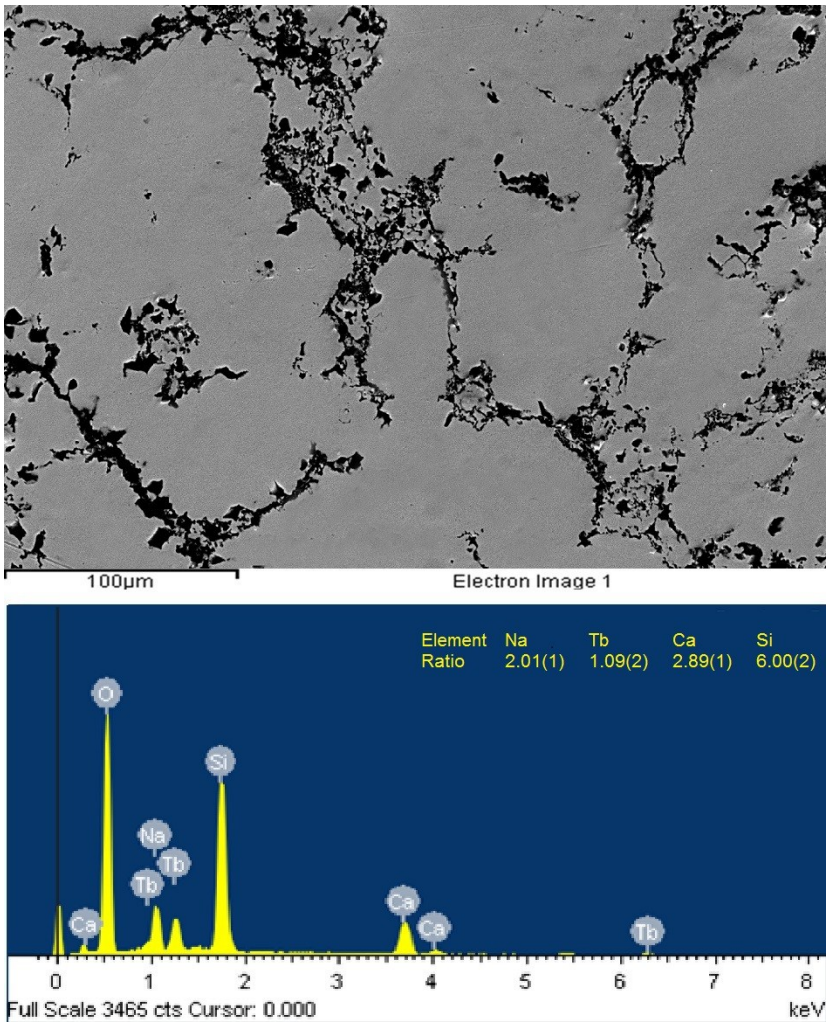
100µm
Electron Image 1
Element Na Tb Ca Si
Ratio 2.01(1) 1.09(2) 2.89(1) 6.00(2)
O
Si
Na
Tb
Tb
Ca
Ca
Ca
Tb
0 1 2 3 4 5 6 7 8
Full Scale 3465 cts Cursor: 0.000
keV

Figure S1

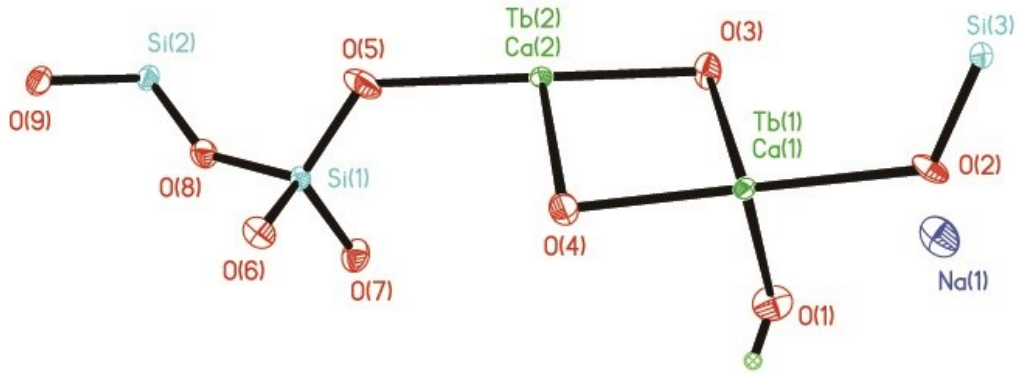

Figure S2

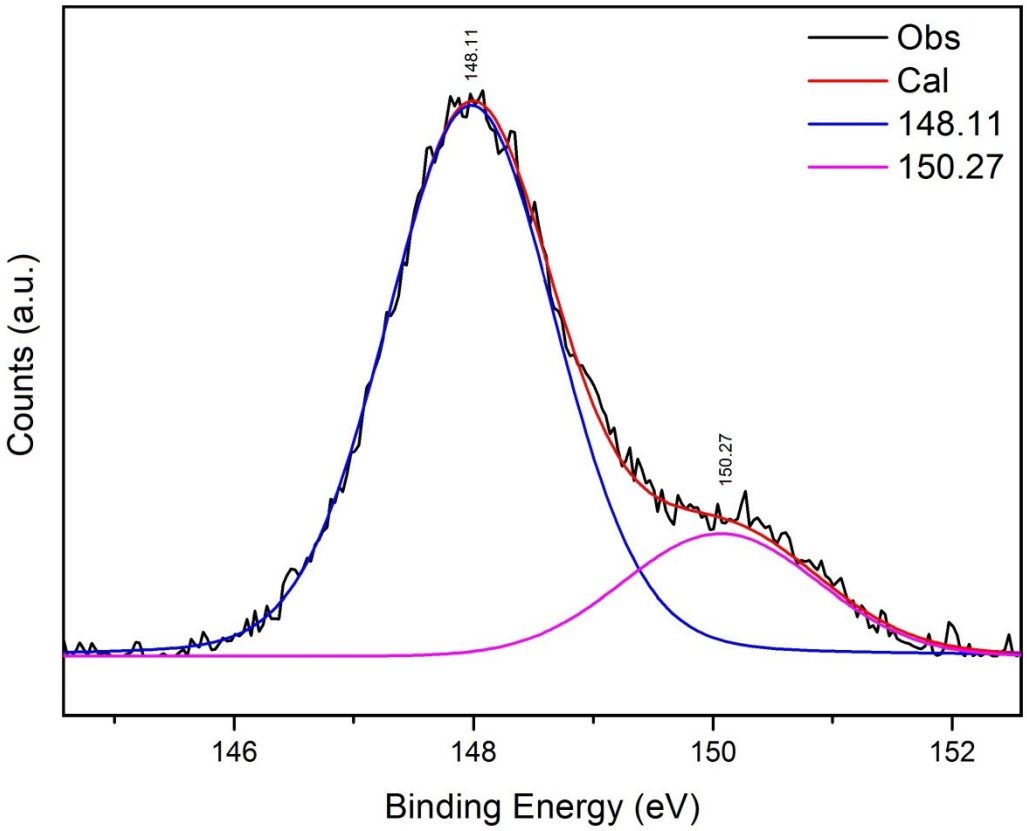
Obs
Cal
148.11
150.27
148.11
150.27
Counts (a.u.)
146
148
150
152
Binding Energy (eV)

Figure S3

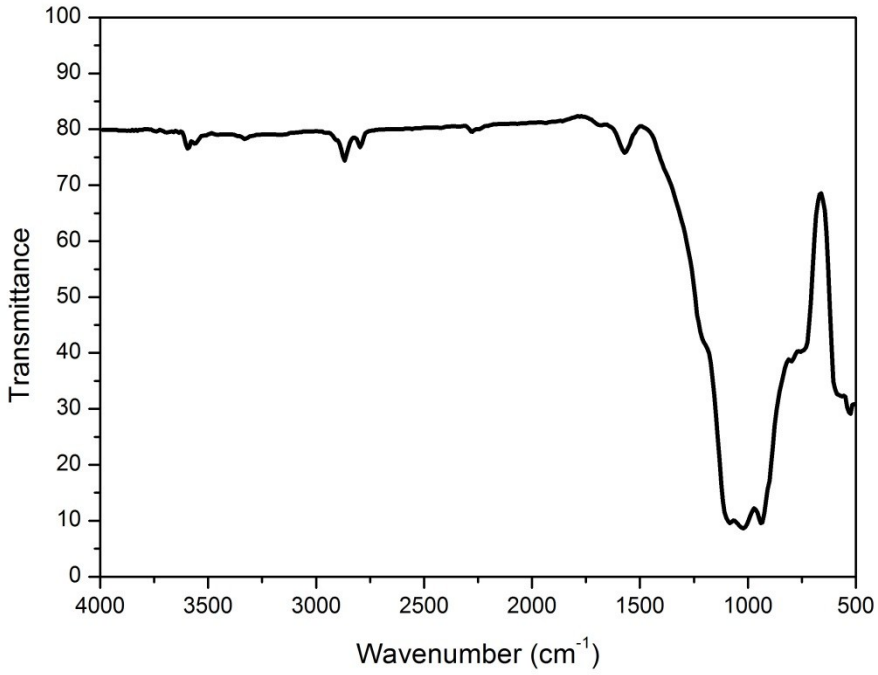
Transmittance
100
90
80
70
60
50
40
30
20
10
0
4000
3500
3000
2500
2000
1500
1000
500
Wavenumber (cm-1)

Figure S4

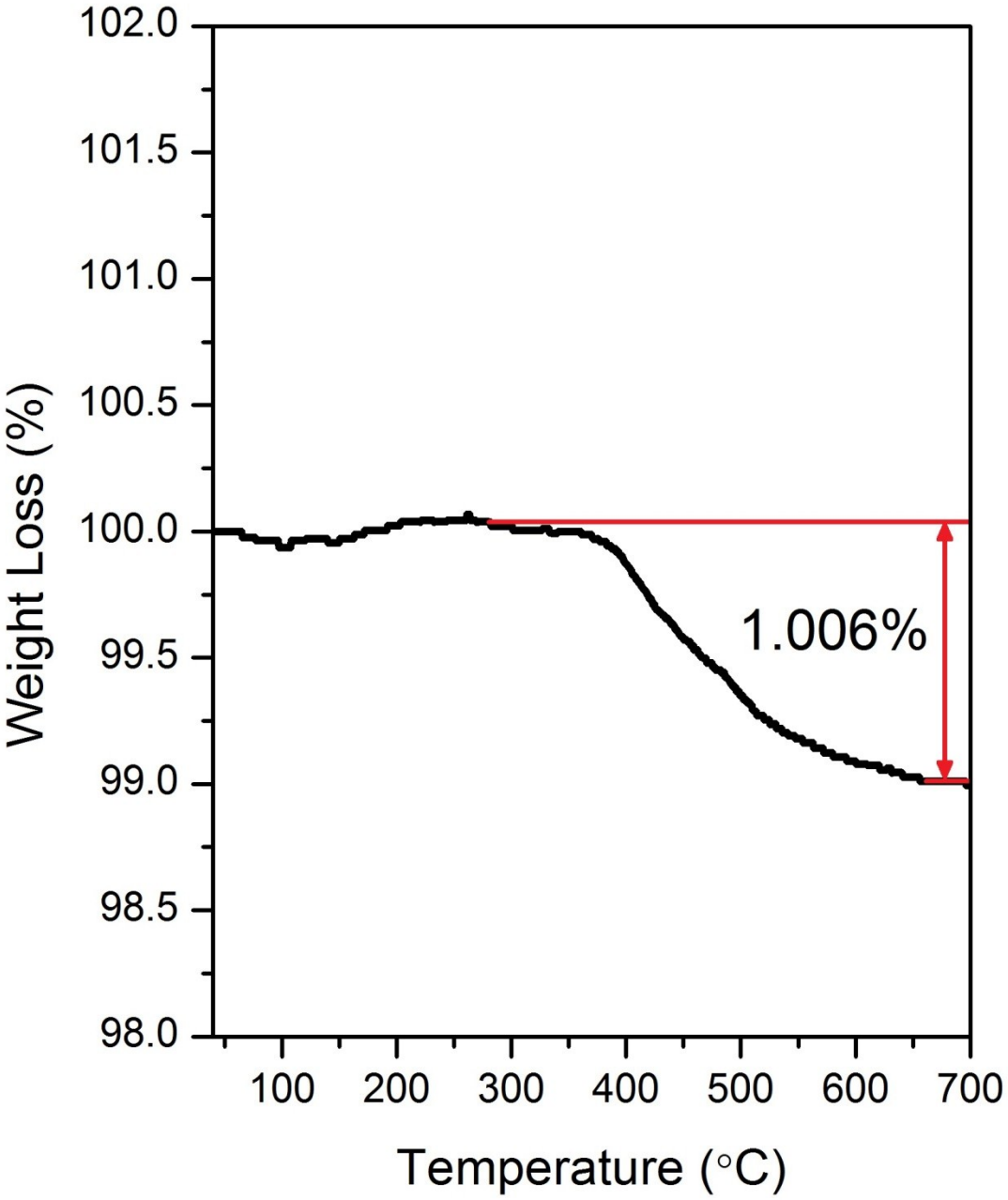
102.0
101.5
101.0
100.5
100.0
99.5
99.0
98.5
98.0
Weight Loss (%)
1.006%
100
200
300
400
500
600
700
Temperature (°C)

Figure S5

Table S1 Atomic coordinates (x, y, z) and equivalent isotropic displacement parameters (U(eq)) for the $Na_2Tb_{1.08}Ca_{2.92}Si_6O_{18}H_{0.8}$ compound

	x	y	z	U(eq)
Ca(1)	1402(2)	5793(2)	3464(2)	10(1)
Tb(1)	1402(2)	5793(2)	3464(2)	10(1)
Ca(2)	1497(1)	967(1)	3550(1)	9(1)
Tb(2)	1497(1)	967(1)	3550(1)	9(1)
Na(1)	3399(7)	7641(7)	599(6)	28(1)
O(1)	4533(11)	6391(12)	3150(11)	23(2)
O(2)	495(9)	8004(11)	1679(9)	16(2)
O(3)	1380(11)	2803(10)	1485(9)	18(2)
O(4)	1841(10)	3941(11)	5623(9)	20(2)
O(5)	1760(11)	-1121(12)	5664(9)	24(2)
O(6)	2802(10)	387(10)	8981(9)	17(2)
O(7)	5420(10)	-161(11)	6808(10)	19(2)
O(8)	3802(10)	-3082(10)	7695(9)	18(2)
O(9)	2783(11)	-5921(10)	8952(9)	19(2)
Si(1)	3415(4)	-983(4)	7197(3)	10(1)
Si(2)	3415(4)	-5400(4)	7176(4)	13(1)
Si(3)	-1509(4)	7670(4)	531(3)	11(1)

Table S2 Selected bond lengths (Å) and angles (°) for the $Na_2Tb_{1.08}Ca_{2.92}Si_6O_{18}H_{0.8}$ compound

bond[a,b]	bond length	bond[a]	bond angle
Si(1)-O(5)	1.602(8)	O(5)-Si(1)-O(7)	113.8(4)
Si(1)-O(6)	1.645(7)	O(5)-Si(1)-O(8)	112.2(4)
Si(1)-O(7)	1.606(7)	O(7)-Si(1)-O(8)	107.2(4)
Si(1)-O(8)	1.637(7)	O(5)-Si(1)-O(6)	111.1(4)
Si(2)-O(1)#4	1.634(8)	O(7)-Si(1)-O(6)	108.1(4)
Si(2)-O(4)#5	1.576(8)	O(8)-Si(1)-O(6)	103.8(4)
Si(2)-O(8)	1.617(8)	O(4)#5-Si(2)-O(8)	113.4(4)
Si(2)-O(9)	1.646(7)	O(4)#5-Si(2)-O(1)#4	113.5(4)
Si(3)-O(2)	1.600(7)	O(8)-Si(2)-O(1)#4	107.2(4)
Si(3)-O(3)#8	1.593(7)	O(4)#5-Si(2)-O(9)	112.1(4)
Si(3)-O(6)#1	1.654(7)	O(8)-Si(2)-O(9)	103.3(4)
Si(3)-O(9)#3	1.667(7)	O(1)#4-Si(2)-O(9)	106.6(4)
M(1)-O(1)	2.292(8)	O(3)#8-Si(3)-O(2)	115.2(4)
M(1)-O(2)	2.391(7)	O(3)#8-Si(3)-O(6)#1	108.1(4)
M(1)-O(3)	2.357(7)	O(2)-Si(3)-O(6)#1	109.5(4)
M(1)-O(4)	2.387(7)	O(3)#8-Si(3)-O(9)#3	109.4(4)
M(1)-O(4) #1	2.464(8)	O(2)-Si(3)-O(9)#3	110.1(4)
M(1)-O(5) #2	2.490(8)	O(6)#1-Si(3)-O(9)#3	104.0(4)
M(2)-O(2) #5	2.361(7)		
M(2)-O(3)	2.311(7)		
M(2)-O(4)	2.381(8)		
M(2)-O(5)	2.473(8)		
M(2)-O(5) #3	2.437(8)		
M(2)-O(7) #4	2.283(7)		

[a] Symmetry transformations used to generate equivalent atoms:

[b] Ca/Tb denoted as M

#1 -x,-y+1,-z+1 #2 x,y+1,z #3 -x,-y,-z+1

#4 -x+1,-y,-z+1 #5 x,y-1,z #8 -x,-y+1,-z

Table S3 Bond Valence (v.u.) for the $Na_2Tb_{1.08}Ca_{2.92}Si_6O_{18}H_{0.8}$ compound

	M-O(Å)	bond valence (v.u.)*		M-O(Å)	bond valence (v.u.)
M1-O1	2.292	0.491	Si2-O4	1.576	1.135
M1-O3	2.357	0.415	Si2-O8	1.617	1.019
M1-O4	2.387	0.384	Si2-O1	1.634	0.979
M1-O2	2.391	0.379	Si2-O9	1.646	0.937
M1-O4	2.464	0.311			**sum 4.070**
M1-O5	2.49	0.289			
		sum 2.270	Si3-O3	1.593	1.087
			Si3-O2	1.6	1.067
M2-O7	2.283	0.51	Si3-O6	1.654	0.922
M2-O3	2.311	0.47	Si3-O9	1.667	0.893
M2-O2	2.361	0.411			**sum 3.969**
M2-O4	2.381	0.389			
M2-O5	2.437	0.335	Na1-O2	2.295	0.180
M2-O5	2.473	0.303	Na1-O8	2.323	0.167
		sum 2.418	Na1-O1	2.474	0.111
			Na1-O7	2.502	0.103
Si1-O5	1.602	1.064	Na1-O6	2.577	0.084
Si1-O7	1.606	1.047	Na1-O9	2.594	0.080
Si1-O8	1.637	0.965	Na1-O6	2.967	0.029
Si1-O6	1.645	0.942	Na1-O9	2.991	0.027
		sum 4.019			**sum 0.783**

Bond valence sums (v.u.) for oxygen atoms

O1 = 1.512	O2 = 1.950	O3 = 1.973
O4 = 2.090	O5 = 1.991	O6 = 1.978
O7 = 1.618	O8 = 2.152	O9 = 1.910