

Table 4  
Comparison of hydrothermal deposits

Location	Ikka Fjord, Greenland	Mono Lake, California	Conical Seamount Marianas	Lost City, MAR	Rainbow, MAR
Tectonic Environment	Continental fjord	Volcanic caldera	Subduction zone	Oceanic core complex	Spreading center
Type of Venting	Cold seeps	Hydrothermal springs	Diffuse seeps, chimneys	Hydrothermal chimneys	Hydrothermal chimneys
Basement Rock	Syenite, carbonite	Rhyolite	Serpentinized mud	Serpentinized peridotite, gabbro	Serpentinized peridotite, gabbroic intrusions?
Precipitate Type	Tufa towers, 1–20m tall	Tufa towers, 1–3m tall	Carbonate towers up to 1.5m tall	Carbonate towers, 30–60m tall	Sulfide chimneys
Precipitate Mineralogy <sup>a</sup>	cc, ik, hmc	arag, cc, ik, gay	arag, brc, calcite, ams	arag, cc, brc, ik?	Sulfide minerals
<sup>87</sup> Sr/ <sup>86</sup> Sr Fluid	0.70855–0.70918		<0.7062	~0.7064	
<sup>87</sup> Sr/ <sup>86</sup> Sr Precipitate	0.70916			0.7076–0.7091	
Source Water	Meteoric	Meteoric	Dehydrated slab fluid	Seawater	Seawater
<i>Source Water</i>					
Temp (°C)	1.3	3–6	1.67	~7	~7
pH	8.1	9.7–10.0	8.1	7.9	7.8
[Ca] (mmol/L)	8.9	4	10.3	10.4	10.2
[Mg] (mmol/L)	45.7	33	52.3	54.4	53
alk (meq/kg)	<0.5	36201 <sup>c</sup>	2.59	2.51	—
<i>Fluid</i>					
Temp (°C)	3.1–4.1	8–18, 35 <sup>b</sup>	1.5 (from chimney)	40–91	365
pH	10.4	6.4–6.8	9.3–12.5	9–10.8	3.3
[Ca] (mmol/L)	0.17	111–169	0.6–1	21.0–23.3	67
[Mg] (mmol/L)	1.7	23–83	0.003–0.009	<1	0
alk (meq/kg)	153	566–1891 <sup>c</sup>	41–52	1.2–4.7	
References	d,e	f,g	h,i,j,k	l,m,n	o,p

<sup>a</sup> Mineral abbreviations: arag, aragonite; cc, calcite; brc, brucite; ik, ikaite; hmc, high-Mg calcite; gay, gaylussite; ams, amorphous-Mg silicate.

<sup>b</sup> Measured from top of tufa tower.

<sup>c</sup> Alkalinity as mg/L HCO<sub>3</sub>.

<sup>d</sup> Marland (1975).

<sup>e</sup> Buchardt et al. (1997).

<sup>f</sup> Bischoff et al. (1993b).

<sup>g</sup> Council and Bennett (1993).

<sup>h</sup> Fryer et al. (1990).

<sup>i</sup> Fryer (1996).

<sup>j</sup> Fryer et al. (1999).

<sup>k</sup> Mottl et al. (2004).

<sup>l</sup> Kelley et al. (2001).

<sup>m</sup> Früh-Green et al. (2003).

<sup>n</sup> Kelley et al. (2005).

<sup>o</sup> Charlou et al. (2002).

<sup>p</sup> Douville et al. (2002).