













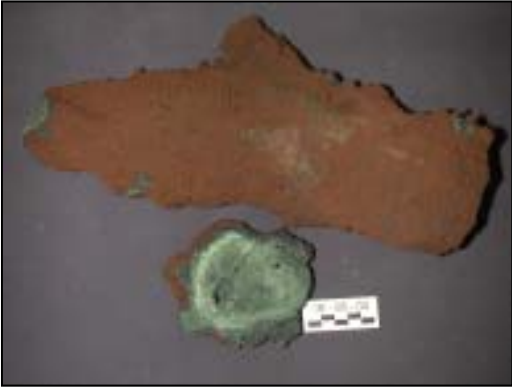

Description and magnetic properties of samples from Site Rainbow collected by dredge hauls and submersible dives during Cruise Iris of R/V L'Atalante (2001). Sample descriptions (taken from Cruise Iris unpublished report) have been prepared on board by cruise participants, who are gratefully acknowledged.

N°	Sample	Location	Rock type	Sample description	Photograph	NRM (A/m)	Susc. (10 ⁻⁵ SI)
01	IR-DR-01-A-04	See DR-01 on location map	Serpentinite	Orange-brown serpentinite with bastitized pyroxene veinlets and chrysotile. Occasional presence of carbonate (aragonite) in the veins. Orange color due to Fe oxyhydroxides (especially enriched on outer edge). Green traces on external crust suggest the presence of atacamite and thus the alteration of Cu sulfides.		0.494	244
02	IR-DR-02-A-01	See DR-02 on location map	Serpentinite	Ochre serpentinite cut by veins at several scales. Coarsest porphyritic with bastite after pyroxenes (opx). Two types of veins made of chrysotile and carbonate. Chrysotile veins up to 1.5 cm-thick show fibers normal or oblique to the vein walls. Some cracks up to few mm or cm long are normal to the vein walls or the chrysotile fibers (A-01). Carbonate veins are late and variably abundant and thick. Aragonite needles are frequent, sometimes in beautiful radiating globular aggregates. Carbonate veins grade into carbonate matrix hosting angular fragments (hydrothermal breccias). Pyroxene bastites may be abundant (>20% and up to 3 mm) to near zero (dunitic serpentinite).		0.366	258
03	IR-DR-02-A-06	See DR-02 on location map	Serpentinite			1.2	224

04	IR-88-01	33°54'15"W 36°13'42"N 2338 m	Serpentinite	Serpentinized harzburgite with bastitized orthopyroxene, talc and magnetite veinlets (<2 mm), oxyhydroxide Fe (Mn) outer crust (<0.5mm). Oxidized rock (clay and iron oxyhydroxides).		0.902	773
05	IR-DR-02-C-01	See DR-02 on location map	Stockwork	Dark blue hydrothermal serpentinite-hosted stockwork. Matrix is very altered serpentinite with bastite, possibly with other very fine-grained and extremely soft minerals (clays? chlorite? anhydrite?). Millimetric crosscutting veins, spaced 5-10 cm, contains sulfides, mostly euhedral pyrite sometimes oxidized to Fe hydroxides. Fine-grained magnetite occurs as cloud in matrix. Some late aragonite needles. Some carbonate veins correspond to late reopening of sulfides veins. No visible alteration halos around sulfides veins		1.77	2567
06	IR-DR-01-H	See DR-01 on location map	Stockwork	Hydrothermalized (serpentinite?) breccia with sulfide crystals (pyrite), blue/grey inside, orange (oxidized) outside. Whitish cement. In the blue/grey part, amorphous "oily" mineral (clay?) replacing the angular rock fragments, cemented by whitish material (anhydrite?). Cubic sulfide (pyrite) up to 1 mm, dispersed or agglomerated in the blue/grey parts, or in relics with oxidation halos in the orange external parts.		2.8	2255

07	IR-DR-01-C-01	See DR-01 on location map	Stockwork	Relics of altered serpentinite forming grey/blue and grey/dark clasts (with magnetite) within massive sulfide. 5-30% of altered serpentinite, 65-85% of chalcopyrite with isocubanite, 5% of other sulfide, i.e. pyrite veins disseminated in the rock or secondary Cu-sulfide (covellite and digenite) with sphalerite.		6.77	5012
08	IR-DR-01-G-02	See DR-01 on location map	Stockwork	Massive sulfide with few patches of blue/grey serpentinitized and hydro-thermalized rock with magnetite. Sulfides made of <95% massive and, in place, micrograined chalcopyrite and isocubanite, 10% blue material probably made of secondary Cu sulfides (covellite type) with sphalerite, and >5% of euhedral pyrite associated with covellite.		11.9	697
09	IR-DR-01-G-01	See DR-01 on location map	Massive sulfide	Massive sulfide with preserved structure of chimney conduit. 80% of isocubanite and chalcopyrite, 20% of secondary Cu sulfides in probable association with sphalerite.		0.0256	13

10	IR-DR-02-J-02	See DR-02 on location map	Massive sulfide	Immature, porous massive sulfide, very dark due to depletion in Cu-sulfides and enrichment in Zn-sulfides. Fe-sulfides such as pyrrhotite/pyrite may be present. Some cavities are filled or coated by tabular translucent crystals typical of barite.		0.392	190
11	IR-DR-02-I	See DR-02 on location map	Oxidized massive sulfide	Highly altered hydrothermal deposit (probably massive sulfide originally) composed of bright red fine grained iron oxide/oxyhydroxide cemented by white translucent material (no reaction with HCl). Translucent material may correspond to sulfate and serpentinite-derived clays. Fine-grained sulfides are relatively abundant when preserved from oxidation. It is speculated that the original non oxidized rock is Fe-rich massive sulfide such as IR-DR-02-J.		0.106	53
12	IR-DR-02-H-02	See DR-02 on location map	Sulfide chimney	Fragments of hydrothermal Cu-rich (and Zn-rich) inactive or active(?) chimneys. Various shapes of thick isocubanite and chalcopyrite chimneys, coarse-grained and very porous. Some fragment are complete channel fragments, other represent longitudinally open fragments of thicker chimneys. Bands of chimneys are composed of yellow isocubanite and chalcopyrite in central part and dark sphalerite in external part. External rim is a crust of iron oxides largely eroded. Some magnetite may be present. Very little, if any, non-metallic material in most chimneys, with the exception of the large Zn-chimney (IR-DR-02-H-01) which may contain carbonate.		0.0111	27

13	IR-95-04	East of 33°54'15"W 36°13'46"N (uncertain positioning)	Sulfide chimney	Isocubanite-rich sulfide chimney, externally ochre (oxidized)		0.00231	4.7
14	IR-96-04	33°54'12"W 36°13'46"N 2304 m	Sulfide chimney	Slab of an inactive sulfide chimney. External part composed of sphalerite, internal part of a hard matrix of isocubanite.		0.517	35

Location map of samples from Site Rainbow. Background: high-resolution bathymetry acquired by ROV Victor during Cruise MomarDream of R/V L'Atalante (2008), red circles, hydrothermal areas; red lines: approximate location of dredge hauls, and red points: approximate location of dive samples collected during Cruise Iris of R/V L'Atalante (2001).

