

## MINERAGRAPHIC AND PETROGRAPHIC DESCRIPTIONS

**SAMPLE NO:** BRCD – 10D 577.3 – 577.35 m

**TYPE:** Core

**LOCATION:** Borrooloola Drilling 2006

**FIELD IDENTIFICATION:** Fine chalcopyrite mineralisation is disseminated through a siliceous - jaspery host. Carbonate gash veins reacts weakly with dilute HCl.

**SECTION TYPE:** Polished Thin Section

**CLASSIFICATION:** *Chalcopyrite and minor pyrite are disseminated through a limonite-dusted microcrystalline quartz matrix that is interpreted to have a low temperature hydrothermal origin and may have replaced a micritic carbonate host. Enigmatic circular (spherical) textures may represent original oololiths supporting a shallow marine origin for the interpreted limestone precursor.*

### **DESCRIPTION:**

#### **MINERALS PRESENT:**

Quartz	85%	<b>Opagues (4%):</b>
Fe/Mg chlorite	tr	Chalcopyrite - dominant
Carbonate - ankerite (veins)	3%	Pyrite - minor
(matrix)	2%	
Fe/Mg chlorite	tr	
Limonite	5%	
Opal/clay	1%	
Opagues	4%	

### **TEXTURE:**

The siliceous matrix is similar to Sample BRCD – 8 265.92 – 266.0 m and comprises limonite – dusted microcrystalline quartz containing disseminated anhedral to subhedral sulphides (opaque). Portions of the matrix contain enigmatic circular (or spherical) features that have been replaced by cryptocrystalline quartz (relatively clear of limonite dusting) and may represent relict oololiths(?). Limonite in the microcrystalline quartz matrix may have replaced a micritic carbonate component and highlights relict banding textures. Anastomosing quartz ± fibrous Fe/Mg chlorite veins and later carbonate tensional veins and lenses cut the matrix.

*In reflected light*, fine anhedral chalcopyrite and finer grained pyrite are disseminated through the microcrystalline quartz matrix. Chalcopyrite typically occurs as singular grains and form an integral part of the matrix. Chalcopyrite can also be associated with the tensional carbonate veins.

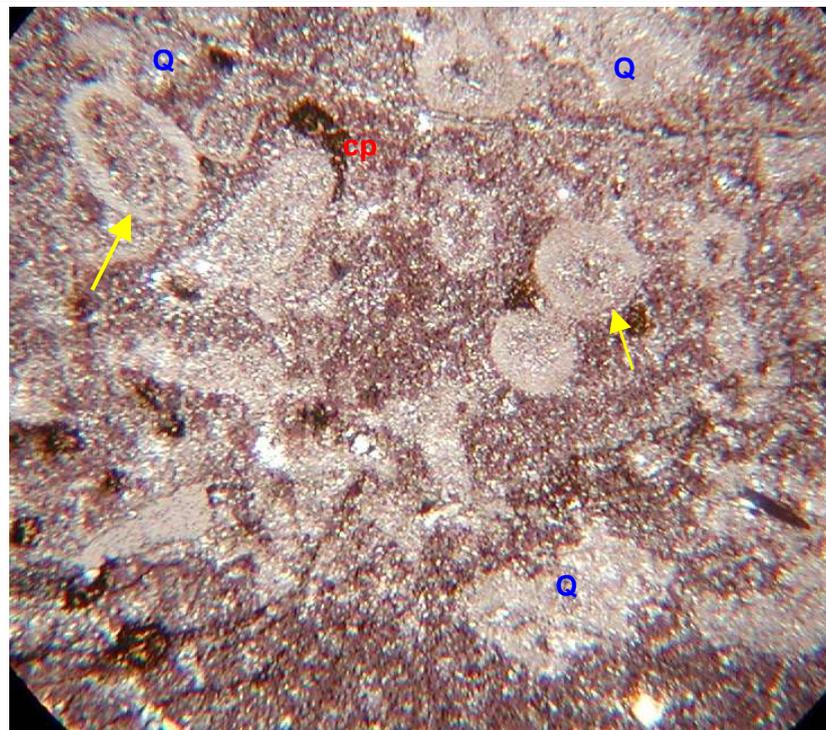
### **ALTERATION/METAMORPHISM:**

The preservation of the microcrystalline (hydrothermal) quartz confirms that the metamorphic grade is low. A possible micritic carbonate host has been pervasively replaced by secondary microcrystalline quartz and contains disseminated sulphides, possibly due to low temperature hydrothermal processes.

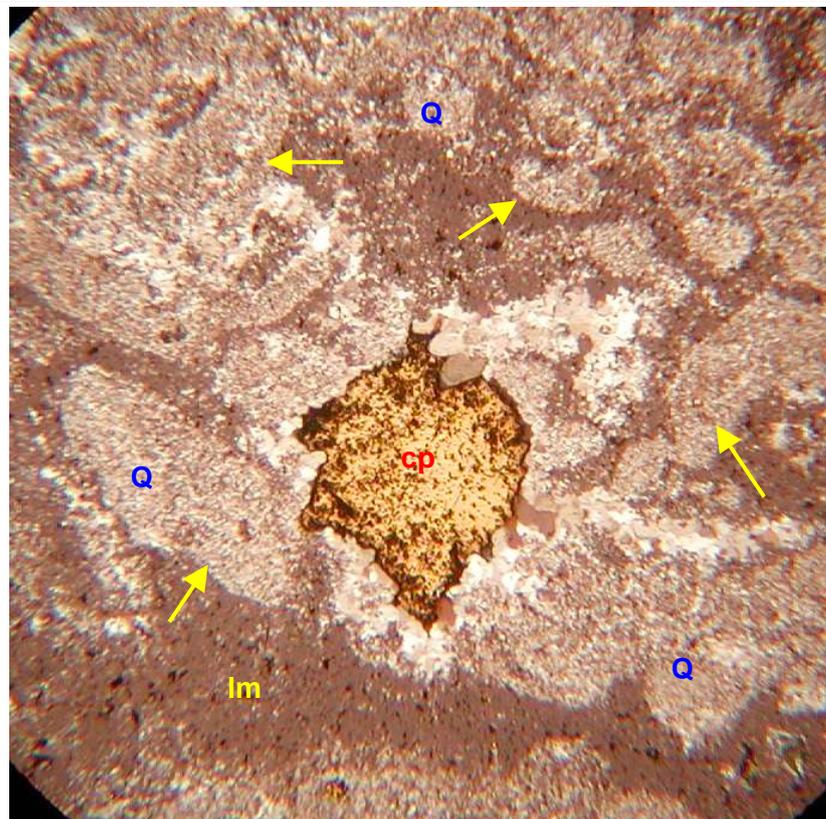
**COMMENTS:**

The microcrystalline quartz assemblage is broadly similar to Sample BRCD 8 265.92 – 266.0 m and probably has a similar low temperature hydrothermal origin supported by presence of disseminated sulphides (chalcopyrite, minor pyrite). The enigmatic circular features is tentatively attributed to possible relict ooliths that have developed in a shallow water marine environment and suggests a micritic limestone precursor.

**Photomicrographs**



The limonite-dusted microcrystalline quartz matrix contains disseminated chalcopyrite (cp) and possible relict ooliths (?) (arrowed). Crossed polars under reflected and transmitted light. Field of view – 3 mm.



Anhedronal chalcopyrite (cp) forms an integral part of the siliceous matrix comprising limonite - dusted microcrystalline quartz (Q). Note the presence of possible relict ooliths (arrowed). Crossed polars under reflected and transmitted light. Field of view – 3 mm

**SAMPLE NO: BRCD – 10D 577.3 – 577.35 m - CONTINUED**