

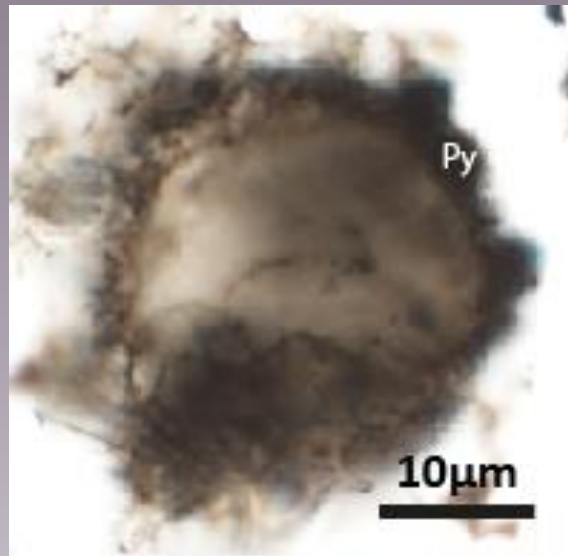
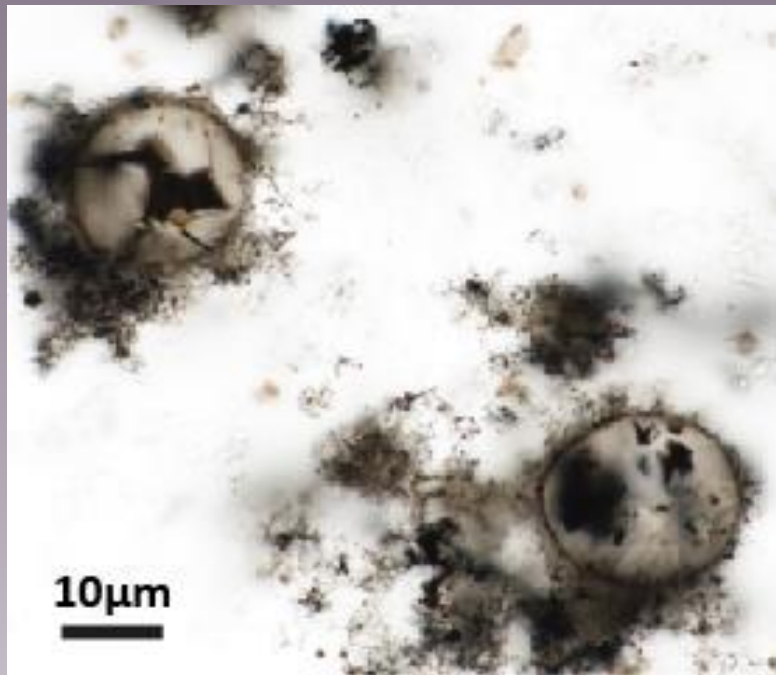


# Testing the cellular nature of large (>10 μm) spheroids in the ~3.4 Ga Strelley Pool Formation (Western Australia)

Coutant Maxime\*, Lepot K, Fadel A, Addad A, Richard E, Troadec D, Ventalon S, Sugitani K, Javaux E.J

\*corresponding author: maxime.coutant@uliege.be

How to recognize **biotic** vs **abiotic** organic structures in chert influenced by hydrothermal input ?



Coutant *et al.* (submitted)

Microfossils ? ([Sugitani et al. 2015b](#))

Volcanic vesicles ? ([Wacey et al. 2018b](#))

Fluid migration ? ([Knoll et al. 2016](#))

- Micro-to-nano observations of organic matter texture and crystal-organic boundaries to assess biogenicity

Optical

CLSM

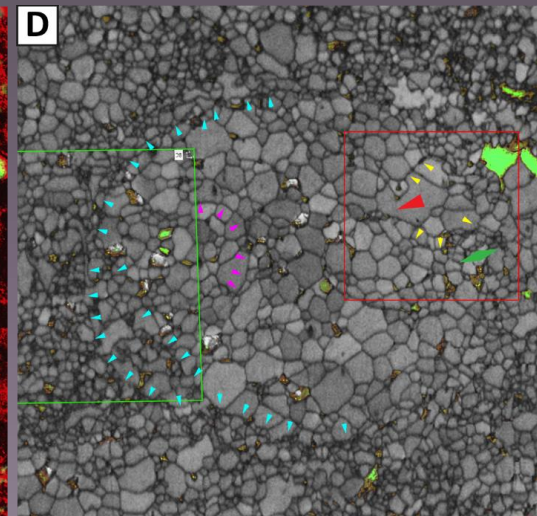
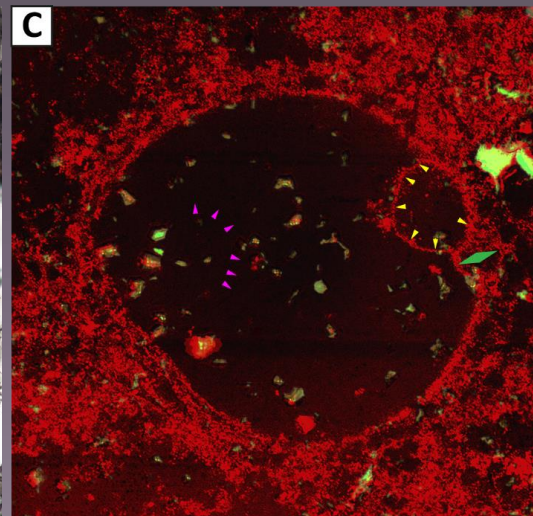
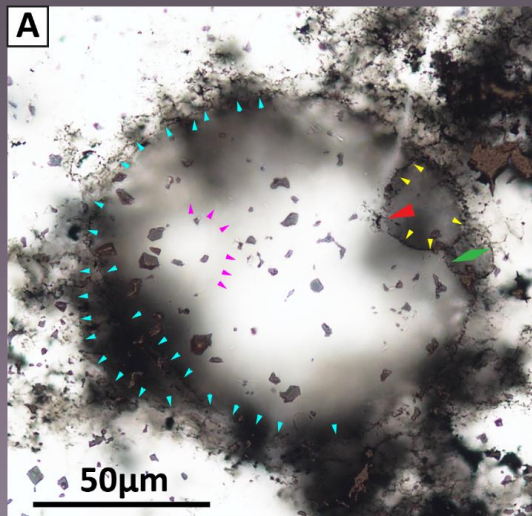
EBSD

Multiple features → Multiple types

Biotic

vs

Abiotic



- Continuous walls at grain boundaries only

- Folded walls

- Colony-like association (not shown)

- Speckled aspect → walls + vesicles (nano-grains in/on quartz)

- Coalescence (walls, inner vesicles)

Coutant *et al.* (submitted)

- Most spheres are abiotic organo-mineral mimics
- Biotic and abiotic features co-occur within a single thin section

➤ Ongoing research : Lenticular specimens

