Calcite interval in aragonite seas: 
Geochemical characterization of post-
extinction oolites at the Triassic-
Jurassic boundary and their 
implications.

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The End-Triassic Mass Extinction (ETME) is one of the five 
major mass extinctions of the Phanerozoic. The deposition of 
ooids is atypically high in the direct aftermath of major 
extinction events, including the ETME. Ooids were intensively 
investigated both petrographically and sedimentologically in the 
past decades; but only recently their potentialities as archives for 
the original chemical composition of the oceans where they 
formed, have gained awareness. Here we present geochemical 
aspects for post-ETME oolites as part of a mid-Norian-
Hettangian section from the Emirates.

These post-extinction oolites show high variability in size and 
development of the cortex. They range from small (~ 300 µm) 
and superficial coating, to bigger (up to 800 µm) and well 
developed.

Bulk isotopic analyses for δ¹³C_carb and δ¹⁸O were performed on 
different components of post ETME oolitic samples (coated 
grains, matrix and cement), to be compared with the general mid-
Norian-Hettangian trend. LA-ICP-MS analyses were performed 
for specific major and trace elements and give insights into 
seawater redox conditions during ooids formation, incorporation 
of silicates and nutrients, the role of bacterial strain in shaping 
the ooids and diagenetic processes. REE and trace elements such 
as Mn, Al, Ti, Zn, P and Sr were critical for this evaluation. 
Geochemical data point out to a calcitic deposition of these ooids 
as odd with the general consideration that the Late Triassic to 
Early Jurassic was part of the Aragonite sea. This has major 
implication on the understanding of the carbonate saturation in 
the oceans just after the mass-extinction and on the interpretation 
of several proxies as the C and Ca isotope-system.