



## **Taphonomy of rhodoliths as determined by constructional and destructional processes**

Florian Nitsch (1), James Nebelsick (1), and Davide Bassi (2)

(1) Department of Geosciences, University of Tübingen, Germany , (2) Dipartimento di Fisica e Scienze della Terra, Università di Ferrara, via Saragat 1, I-44122 Ferrara, Italy

Rhodoliths made up primarily of self encrusting coralline algae are important contributors to Cenozoic carbonates and can be used as ecological indicators following taxonomic make up, encrustation patterns and growth form morphologies. Relatively few studies have been conducted on the taphonomy of rhodoliths with respect to their preservation potentials and how this affects our knowledge of carbonate production. In this study an actualistic approach is used assessing the production and destruction of rhodoliths derived from the Island of Giglio (Tyrrhenian Sea, Italy). These rhodoliths are studied with regard to shape, growth-forms and taxonomy of the constructing fauna, presence and degree of porosity and types of void formation. Techniques used include sectioning and micro-computed tomography (micro-CT) enabling the recognition of different void types on different scales as well as their distributions.

The rhodoliths are spheroidal to sub-spheroidal in shape and reach sizes up to to 13 cm in length. They are dominated by coralline red algae though the skeletons of other components especially bryozoans and serpulid worm tubes contribute to the nodules. Porosity values up to 41 % in volume were measured consisting of three different types of voids: Primary voids are represented by single cells of the algae; constructional voids are caused by amalgamated protuberances of coralline algae thalli; destructional voids are produced by dissolution of nucleus as well as potential soft bodied animals contributing to the rhodoliths and by a wide range of bioerosion types including Trypanites and Gastrochaenolites ichnotaxa.