



Atomic force microscope comparisons of fossilized and modern brachiopods

Spécialité Sciences et technologies des matériaux

Niveau d'étude Bac+4/5

Formation Master 2

Unité d'accueil [SPEC/SPHYNX](#)

Candidature avant le 17-03-2019

Durée 6 mois

Poursuite possible en thèse non

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Autre lien

http://iramis.cea.fr/Phocea/Vie_des_labos/Ast/ast_sstechnique.php?id_ast=2096

Résumé

The IMAFMP team will analyze Brachiopods from the Palaeontological collections of the Muséum National d'Histoire Naturelle (MNHN, Paris) in collaboration with S. Charbonnier and D. Gaspard, MNHN.

Sujet détaillé

The brachiopods, present since the Early Cambrian (more than 500 MA), are benthic marine invertebrates living attached to various kinds of substrates. These organisms possess a bivalved shell (ventral and dorsal). Within the subphylum, there are 3 series: (1) Rhynchonelliformea: This is the first series of the 3 subphyla, with a shell composed of low-magnesium calcite; (2) Craniiformea: The shells concerned are composed of higher amounts magnesium calcite; and (3) Linguliformea: These species possess a shell composed of apatite (calcium phosphate). Brachiopods still live in modern seas and oceans all over the world. Yet, the species diversity has decreased. Thus, brachiopods remain a true witness of (palaeo)environments. Figure 1 depicts the process of secretion of the shell, which has 2, or even 3, layers. From the figure, one can see microstructural organization from the generative zone of the mantle tissue. When working on fossils shells, it is important to analyze living specimens in parallel to understand what is susceptible to modifications during fossilization. The Peak-Force Atomic Force Microscopy (PF-AFM) allows us to reach the nano-level of the hierarchical architecture of the shell complementing Scanning Electron Microscopy observations (SEM) (Gaspard & Nouet, JSB, 2016).

Mots clés

Microscope à force atomique, Paléo-environnements et taphonomie

Compétences

Microscope à force atomique

Logiciels

Matlab, Nanoscope

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Summary

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Full description

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Keywords

Atomic Force Microscopy, Brachiopods

Skills

Atomic Force Microscopy

Softwares

Matlab, Nanoscope