
Environmental magnetism and paleomagnetism of Portuguese speleothems

Eric Font^{*1,2}, Jorge Ponte^{†2}, Cristina Veiga-Pires^{‡3}, and Claude Hilaire Marcel^{§4}

¹Fundação da Faculdade de Ciências de Lisboa (FCUL) – Faculdade de Ciências da Universidade de Lisboa Campo Grande 1749-016 Lisboa · Portugal T (+351) 217 500 357 • Ext. 21103), Portugal

²Fundação da FCUL (FFCUL) – IDL-FCGUL, Faculdade de Ciências de Lisboa Campo Grande, 1749-016 Lisboa, PORTUGAL, Portugal

³Université de l'Algarve (CIMA) – n.a., Portugal

⁴GEOTOP - Canada (GEOTOP) – n.a., Portugal

Résumé

Environmental magnetism and paleomagnetism of speleothems is still in its early stage of development. Here we studied two speleothems from the Algarve region (Portugal) by using a multidisciplinary approach, including rock magnetism and geosciences tools, in order to discuss what are the factors that control the preservation and reliability of the magnetic remanence, and what are the environmental information that speleothem recorded. Our results show that the main magnetic carriers of the speleothems under study are primary (detrital) and consist of maghemite (and magnetite?) and hence, they represent a regional environmental signature. Interestingly, a stable and probably detrital remanent magnetization could be isolated in the fresh stalagmite, whereas the weathered stalactite yielded chaotic magnetic directions and very low remanent intensities. We suggest that these low intensities can be the result of different remanence acquisition mechanisms between stalagmite and stalactite and/or iron dissolution by fungal activity. Finally, we discuss the influence of calcite growth inclination on the remanent magnetic inclination.

*Intervenant

†Auteur correspondant: jorgeponte89@gmail.com

‡Auteur correspondant: cvpires@ualg.pt

§Auteur correspondant: chm@er.uqam.ca