Goldschmidt 2021 Abstract
https://doi.org/10.7185/gold2021.7591

Light intensity control on compound specific carbon isotope fractionation in cultures of *Haslea ostrearia*.

MARIA LUISA SÁNCHEZ MONTES[1], THOMAS MOCK[1], LUKAS SMIK[2] AND NIKOLAI PEDENTCHOUK[1]

[1]University of East Anglia

[2]University of Plymouth

Presenting Author: m.sanchez-montes@uea.ac.uk

Highly branched isoprenoids (HBIs) have successfully been used in sea ice reconstructions in the Arctic (IP_{25}) and the Antarctic ($IPSO_{25}$) [1] and show to be robust qualitative sea ice proxies preserved in sedimentary records dating back as far as the Late Miocene [2]. To explore unique information about sea ice characteristics e.g. ice thickness/light penetration, novel tools such as compound-specific stable isotopes ($\delta^{13}C$ and $\delta^{2}H$) may be useful. In the case of IP_{25} $\delta^{13}C$ in the Arctic sea-ice, sediment traps and sediments, high values suggest that carbon fractionation is affected by sea-ice environments [3]. We present $\delta^{13}C$ data of certain HBIs from *Haslea ostrearia* grown under different light settings, which aim to explore biochemical effects of *Haslea ostrearia* adaptation to different light settings [4]. Further efforts will focus on the investigation of both $\delta^{13}C$ and $\delta^{2}H$ of HBIs from sea-ice diatoms as part of the developmental work looking at new and complementary HBI derived tools for sea ice reconstructions.

[1] Belt (2018), *Organic Geochemistry* 125, 277–298.

[2] Stein, Fahl, Schreck, Knorr, Niessen, Forwick, Gebhardt, Jensen, Kaminski, Kopf, Matthiessen, Jokat & Lohmann (2016), *Nature Communications* 7, 11148.

[3] Belt, Massé, Vare, Rowland, Poulin, Sicre, Sampei & Fortier (2008), *Marine Chemistry* 112, 158–167.

[4] Sánchez-Montes, Pedentchouk, Mock, Belt & Smik (2020), *EGU General Assembly 2020*, EGU2020-17906.