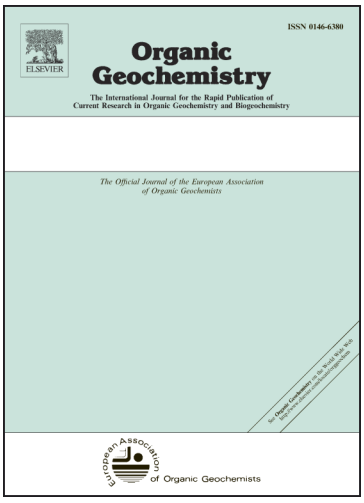
Accepted Manuscript




# δ $^{34}$S character of organosulfur compounds in kerogen and bitumen fractions of sedimentary rocks

Hendrik Grotheer, Paul F. Greenwood, Malcolm T. McCulloch, Michael E. Böttcher, Kliti Grice

PII: S0146-6380(17)30001-3
DOI: http://dx.doi.org/10.1016/j.orggeochem.2017.04.005
Reference: OG 3537

To appear in: *Organic Geochemistry*

Received Date: 2 January 2017
Revised Date: 18 April 2017
Accepted Date: 19 April 2017

Please cite this article as: Grotheer, H., Greenwood, P.F., McCulloch, M.T., Böttcher, M.E., Grice, K., δ $^{34}$S character of organosulfur compounds in kerogen and bitumen fractions of sedimentary rocks, *Organic Geochemistry* (2017), doi: http://dx.doi.org/10.1016/j.orggeochem.2017.04.005

# $^{34}$S character of organosulfur compounds in kerogen and bitumen fractions of sedimentary rocks

Hendrik Grotheer[a,*,#], Paul F. Greenwood[a,b], Malcolm T. McCulloch[b], Michael E. Böttcher[c], Kliti Grice[a]

[a]*WA-OIGC, Department of Chemistry, The Institute for Geoscience Research, Curtin University, GPO BOX U1987 Perth, WA 6845, Australia;* [b]*School of Earth and Environment, University of Western Australia, Crawley, WA 6009, Australia;* [c]*Geochemistry and Stable Isotope Biogeochemistry Group, Leibniz Institute for Baltic Sea Research (IOW), D-18119 Warnemünde, Germany*

[#]*present address: Alfred Wegener Institute for Polar and Marine Research, Marine Geochemistry, 27568 Bremerhaven, Germany*

*Corresponding author: h.grotheer@curtin.edu.au; Hendrik.Grotheer@AWI.de

**Keywords**

Organosulfur compounds; Stable sulfur isotopes; Kerogen; Bitumen; HyPy; Hydropyrolysis

**ABSTRACT**

Hydropyrolysis (HyPy) of S-containing oil mature rock samples from two geologic settings each produced much higher concentrations of organosulfur compounds (OSCs) compared to their free occurrence in the bitumen. The $^{34}$S values of the most abundant OSCs from the kerogen and in the bitumen, were measured by gas chromatography inductively coupled plasma mass spectrometry (GC-ICP-MS). DBT and mDBTs from the HyPy processed kerogen fractions showed a distinct $^{34}$S depletion, with $^{34}$S values up to 12 ‰ lighter than their bitumen occurrence. The different $^{34}$S values of OSCs from the kerogen and bitumen fractions is likely reflective of differences in timing of production, reduced sulfur sources or organic sulfurisation mechanism.

## 1. Introduction