## Supporting Information Sulfur isotope ( $\delta^{34}S$ ) analyses



**Figure S1.** The A-A' section through the specimen G-FB2-s-259 and the corresponding histogram of  $\delta^{34}$ S values (cf. Table S1). Distribution of S isotope values in the map was rendered following a color scale increasing from dark blue to red. Scale bars are 1.0 cm.



**Figure S2.** The A-A' section through the specimen G-FB2-s-223 (the circular lines in the CT picture are artefacts of the tomographic rendering) and the corresponding histogram of  $\delta^{34}$ S values (cf. Table S1). Distribution of S isotope values in the map was rendered following a color scale increasing from dark blue to red. Scale bars are 1.0 cm.



**Figure S3.** The A-A' section through the specimen G-FB2-s-272 and the corresponding histogram of  $\delta^{34}$ S values (cf. Table S1). Distribution of S isotope values in the map was rendered following a color scale increasing from dark blue to red. Scale bars are 1.0 cm.



**Figure S4.** The A-A' section through the specimen G-FB2-s-573 and the corresponding histogram of  $\delta^{34}$ S values (cf. Table S1). Distribution of S isotope values in the map was rendered following a color scale increasing from dark blue to red. Scale bars are 1.0 cm.



**Figure S5.** The A-A' section through the specimen G-FB2-s-71 and the corresponding histogram of  $\delta^{34}$ S values (cf. Table S1). Distribution of S isotope values in the map was rendered following a color scale increasing from dark blue to red. Scale bars are 1.0 cm.



**Figure S6.** The A-A' section through the specimen G-FB2-s-576 and the corresponding histogram of  $\delta^{34}$ S values (cf. Table S1). Distribution of S isotope values in the map was rendered following a color scale increasing from dark blue to red. Scale bars are 1.0 cm.



**Figure S7.** The A-A' section through the specimen G-FB2-s-52 and the corresponding histogram of  $\delta^{34}$ S values (cf. Table S1). Distribution of S isotope values in the map was rendered following a color scale increasing from dark blue to red. Scale bars are 1.0 cm.



**Figure S8.** The A-A' and B-B' sections through the specimen G-FB2-s-57 and the corresponding histograms of  $\delta^{34}$ S values (cf. Table S1). Distribution of S isotope values in the maps was rendered following a color scale increasing from dark blue to red. Scale bars are 1.0 cm.



**Figure S9.** The A-A' section through the specimen G-FB2-s-575 and the corresponding histogram of  $\delta^{34}$ S values (cf. Table S1). Distribution of S isotope values in the map was rendered following a color scale increasing from dark blue to red. Scale bars are 1.0 cm.

1.2 - Analysis of a Carboniferous pyrite sun and of a Jurassic pyrite flower



**Figure S10.** The A-A' and B-B' sections through the Upper Carboniferous pyrite sun of Sparta, Illinois (Swedish museum number SMNH X4450) and the corresponding histograms of  $\delta^{34}$ S values (cf. Table S1). Distribution of S isotope values in the maps was rendered following a color scale increasing from dark blue to red. Scale bars are 1.0 cm.



**Figure S11.** The A-A', B-B' and C-C' sections through the pyrite flower from the Upper Jurassic Posidonia Shale, southern Germany (Swedish museum number SMNH X4449), and the corresponding histograms of  $\delta^{34}$ S values (cf. Table S1). Distribution of S isotope values in the maps was rendered following a color scale increasing from dark blue to red. Scale bars are 1.0 cm.