

## ***Interactive comment on “Determination of the molecular signature of fossil conifers by experimental palaeochemotaxonomy – Part 1: The Araucariaceae family” by Y. Lu et al.***

**Anonymous Referee #1**

Received and published: 30 September 2012

The work is an impressive molecular study of the Araucariaceae family, and being the first part of important palaeochemotaxonomy investigations of Conifer gymnosperms. The paper filled gap in understanding of biomolecules geochemical transformations of the Araucariaceae, showing differences in biomarkers distribution among different species. The work will be very helpful for geochemists to identified the chemotaxonomic affinity in fossil materials. The manuscript is generally well-written and well-illustrated, and references and citations appear to be complete and up-to-date. I recommend publication following minor revision based on points listed below.

Minor points:

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a/. Page 105016, Line 9. Change “diagenesis” to “diagenetic”. b/. For clarity, In my opinion Fig 2 should be separated onto two Figures (Fig 2 & 3), showing separately enlarged aliphatic and aromatic fraction. This important figure should be as large and informative as possible. The same according to Fig. 5 and Fig. 8. c/. Page 105018, Line 18 to 21. Add references to confirm this information. d/. Page 105018, Line 8. Change “K-T boundary” to “K-Pg boundary”. According to new decisions Tertiary should be changed to Paleogene. e/. Page 105023, Line 7. Add more information about silylation procedure (time, temperature ect.) f/. Page 105028, Line 19. Change “a same” to “the same” g/. Spectrum from Fig. 6c is for sure not methylretene. However it is also not trimethyl-phenanthrene (as You mention on the 10528 page, Line 20 and on the Fig. 6c). It is probable one of the penthamethyl-phenanthrene isomers (in trimethyl-phenanthrenes molecular and base peak is  $M^+ = 220$ ). h/. In Table 2 You have used crosses to show the relative concentrations of particular compounds. Maybe better will be presentation based on abundance of particular compound in relation to major peak = 100, as it was presented in: Marynowski et al., 2007. Appl. Geochem. 22, 2456-2485 and Marynowski et al., 2008. N. Jb. Geol. Paläont. Abd. 247, 177-189.

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Interactive comment on Biogeosciences Discuss., 9, 10513, 2012.

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