

Biogeosciences Discuss., referee comment RC2  
<https://doi.org/10.5194/bg-2021-199-RC2>, 2022  
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## Comment on bg-2021-199

Anonymous Referee #2

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Referee comment on "Reply to Lars Olof Björn's comment on "Fundamental molecules of life are pigments which arose and co-evolved as a response to the thermodynamic imperative of dissipating the prevailing solar spectrum" by Michaelian and Simeonov (2015)" by Karo Michaelian and Aleksandar Simeonov, Biogeosciences Discuss., <https://doi.org/10.5194/bg-2021-199-RC2>, 2022

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The authors reply to Lars Olof Björn's comments on their article "Fundamental molecules of life are pigments which arose and co-evolved as a response to the thermodynamic imperative of dissipating the prevailing solar spectrum". They highlight Björn's critique points and respond in a detailed manner to his comments. I find the idea fascinating and intriguing and enjoyed reading it.

You mention that earth reflects 29% of incident light (line 69), then proceed to calculate the entropy ratio production (equation 2). The results suggest a 2.6 times greater entropy production for earth due to the life on earth (Line 84-85). I was curious, do you expect the ratio to be close to 1, if you use parameters from an earth without life (Line 44)? Perhaps such calculations might strengthen your assertion, if possible, to make that calculation.

Comments:

Line 35: I am curious if there are any examples of which types/specific enzymes might be the first to arise from the fundamental molecules based on your assertions?

Line 102-104: "However, they produce.....today". Needs a reference.

Line 120-124: A reference is needed

Some words are unnecessary negatively targeting Björn. To keep a proper and neutral discussion, either leave the words out or tone it down. Examples:

Line 6; "erroneous"

Line: 11: "...incorrect and his analysis does not provide legitimate reason for doubting..."

Line 24: "erroneous"

Line 155: "Björn incorrectly assumes..."

Line 159-160: "His conclusions are therefore mistaken and do not provide legitimate reason for doubting..."