

Interactive comment on “High precision laser spectrometer for multiple greenhouse gas analysis in 1 mL air from ice core samples” by Bernhard Bereiter et al.

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Thank you for your thoughts and the relevant question. Yes, we are well aware of this highly challenging issue and therefore we clarified beforehand the expected type of the drilling fluid that will be used within the “Beyond EPICA Oldest Ice Core” project. We will add the following lines to the manuscript: “A significant advantage of laser spectrometry over - for instance - mass spectrometry is that the absorption lines are gas-specific and interferences between different gases unlikely. In the case of ice core analyses, in particular, the use of organic drill fluids may lead to contamination with potentially absorbing trace gases. Therefore, we tested for interferences with the drill

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fluid (ESTISOL™ 140) which is to be used in Antarctica within the Beyond EPICA ice core project. We purchased pure ESTISOL™ 140 and introduced the headspace of drill fluid contaminated sample into the multipass cell in quantities that we considered representative for the ice core samples. This lead to no alterations in the spectrum within the wavenumber window covered by our two lasers. The main reason is that these large organic compounds have very broad absorption features and tend to be localized to frequencies typical for functional groups. Therefore, our narrow-band laser spec-troscopic approach in the mid-IR is not affected by such contaminations in the studied wavenumber range."

[Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2020-279, 2020.](#)

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