Amsterdam, 28 May 2020

Dear Editor

We would like to submit the manuscript entitled “Rayleigh-Brillouin light scattering spectroscopy of air; experiment, predictive model and dimensionless scaling” for publication in Molecular Physics, in particular in for the Special Issue dedicated to prof. David Parker.

The paper reports on new quality data of RB-scattering in air, which in our view would warrant publication. But we favored to combine the novel experimental results with extended theory. We have now a predictive model that would generate spectra profiles in air scattering (with relevance to the Earth’s atmosphere), partly based on the new data, partly on literature data. I addition we have tested the validity of fluid dynamic scaling laws for RB-scattering in air. That has made the paper into a lengthy one, which in our view would be educational for a generation of young atmospheric scientists. There lies part of the special significance of this paper.

The paper contains a long Appendix with the theoretical formalism which is also reflected in a Mathlab code that we wish to make publicly available for users to compute RB scattering in air under a wide variety of conditions. Of course we also make available the measured data on spectral profiles, to be used in the community to verify alternative model descriptions.

In view of the length of the paper also the abstract is longer than usual. We request a special permission for that.

We hope that the paper can be published in Mol. Phys. We would like to make use of the Open Access policy established between Taylor & Frances and the Dutch universities for Mol. Phys.

Best regards

Prof. Wim Ubachs

On behalf of the authors