Dear JAP editorial team

We would like to thank the editors and reviewers for the time taken to review our manuscript, and for the helpful comments which they provided. We have now amended the manuscript to address the points they have raised, which we detail below in a point by point fashion. The reviewer comments are in blue, our response is in black and changes in the manuscript are listed in red (also highlighted in yellow within the revised manuscript 'marked' version). We have also provided a clean manuscript version for easier review. We feel that the manuscript has now been significantly improved in terms of clarity and structure, as well as a number of small typographical corrections. We now hope that the manuscript is suitable for publication in the Journal of Applied Physics.

Yours Sincerely

Joshua Caldwell

Daniel Wasserman

Reviewer 1

The major issue in this manuscript is on "(III) measurement techniques" and on "(IV) examples and applications." The chapter (III), which spends more than half of this manuscript, describes detailed explanation on each measurement technique, without clear connection to the study on polaritons. The readers who are interested in "controlling and probing polaritons in the mid- to far-infrared" would be more interested in chapter (IV). But this chapter (IV) does not contain sufficient information: it contains only few examples and the explanation on each topic is too simple.

In writing the tutorial we chose to write an extensive section covering experimental techniques for infrared polaratonics. This was largely motivated by the relatively steep learning curve for infrared spectroscopic techniques, as well as a number of recent reviews that more completely discuss device physics (such as Refs 1,2 and 25). This was also the motivation for putting experimental techniques before the discussion of the specific examples of polaritonic experiments, as this provided the basis for how these experiments were performed and then gave examples of how they were implemented. However, we did not make this sufficiently clear in our submitted manuscript. To address this, we have amended the introduction to make the motivation and layout of the paper clearer:

Page 3, paragraph 2: 'Unlike earlier reviews … we follow these details with specific examples'

We have also changed the paper title, to

'Probing infrared polaritons'

The reviewer also makes an excellent point, in that we do not adequately link the examples and experimental techniques – which hinders the message of the paper. In order to address this, we have made a number of amendments throughout the manuscript, which better link the sections, and provide a more educational context for understanding the different types of experiment:

Page 8 – Paragraph 2: 'In this section of the tutorial we aim to describe the variety of experimental techniques …analysis just now becoming available for the study of MIR polaritonics'.

Page 9 – Table 1

Page 25 – Paragraph 3: 'While the bulk of the … those entering the field.'

Reviewer 2

1. 'There is a missing period (.) at the end of equation 2.'

We have added the period

Page 5, paragraph 2: - $\varepsilon(\omega) = \varepsilon_\infty \left(1 + \frac{\omega_{LO}^2 - \omega_{TO}^2}{\omega_{TO}^2 - \omega^2 - i\omega\Gamma}\right)$.

2. ' The fundamental condition for the grading coupling … the additional mathematical representation must help the readers' understanding.'

We have now included the mathematical expression for grating coupling:

Page 7, paragraph 1: '$k_{SP} = k_0 \sin(\theta) + \frac{2m\pi}{d}$ (4)
Where d is the grating period, and m is an integer.'

3. 'The hidden x-axis label of operation frequency within the Fig. 2b needs to be shown.'

We have amended Fig 2b to include the frequency axis

4. 'The equation $S(\_; T_i) = R(\_)(s(\_) + r(\_; T_i))$ … at the same paragraph.'

We thank the reviewer for catching this mistake in our labelling, this has been addressed in the manuscript

See page 15

5. 'The extensive … For readers' convenience an outlook of the scopes and advantages must be explained at the educational viewpoint.'

The reviewer makes an excellent point. In order to provide this summary, we have included a new summary paragraph at the start of section III:

Page 8 – Paragraph 2: 'In this section of the tutorial we aim to describe the variety of experimental techniques …analysis just now becoming available for the study of MIR polaritonics'.

We have also included Table 1 – which summarizes the capabilities of common types of infrared spectroscopy modes to act as a reference for a user designing an experiment.

6. Since "Mylar" is the trade name of the commercial product … its chemical name and property should be addressed.

We have now amended the manuscript to use the appropriate chemical name for the polymer:

Page 11- Paragraph 1: 'biaxially-oriented polyethylene terephthalate (BoPET)'

Page 24 –Mylar replaced with BoPET

7. 'A possible misspelling of SPhPs at the section 4.1'

We thank the reviewer for catching this typo, which has been corrected in the revised manuscript.

8. In the reference section…

The references have been fixed and appropriately formatted for the re-submission