# Practical exercise – instructions

**The aim of the practical exercise is to analyse the review below and assess how it could be improved. We will ask you to read the review and make a few notes about how the review could be improved. In the discussion groups, you will be asked to discuss the questions below.**

After the discussion, we will share the other review on the manuscript, and show how the other reviewer provided more constructive feedback.

**Review 1 (for discussion)**

**Reviewer recommendation: Minor revisions**

**Comments to the author:**

This manuscript reports experimental observations of energy and species distributions and lifetimes in N2, CO2, and CH4 in microwave discharges. These results are invaluable for evaluating the efficiency of energy transfer and thus for driving chemical transformations of these species. I just have a couple suggestions for improving the work:

1. A popular way of harnessing excitations for chemical transformations is coupling with catalytic surfaces. Could the authors comment on the implications of the observed lifetimes on mean free paths and implications for the spatial distribution requirements on materials to intercept and react with these species before they decay?

2. Are observations made with single gases? Is there a potential to control energy and species distributions by introducing additional diluents (He, Ar, ....) into the gas?

3. The authors might revisit the last three paragraphs of the Introduction. I think it is possible to provide a clearer description of the questions to be asked and answered in the work.

**Questions for discussion**

* What are the strengths of this review?
* What is missing from this review?
* Do you think an author would find this review useful in improving their manuscript? Why/why not?
* Do you think an editor would find this review useful when making a decision on the manuscript? Why/why not?
* How could this review be improved?
* Does the reviewer give enough detail for the authors to understand and address their comments?
* IOP Publishing editors rate all of the reviews we receive on a scale of 1-5: 1=poor, 2=satisfactory, 3=good, 4=excellent, 5=outstanding. Based on this rating system, how would you rate this review?