

Dear Professor Lübken,

In light of the referees' comments I have thoroughly revised the manuscript. I have changed the title to reflect the fact that it is a possible mechanism. I have been in touch with Dr. Feofilov (referee #1) and Dr. López-Puertas (referee #2) and using the model atmospheres provided by them presented the results of the calculations in the forms of four Table (specific comments #2 and #3 of referee #4). Anonymous referee #3 provided reference to some old work, unknown to me, on photo-acoustic and fluorescence studies. The results of these studies led me to abandon the hypothesis of energy transfer from thermal rotational levels of  $N_2$  and led instead to adoption of hypothesis of energy transfer from super-thermal rotational levels of  $N_2$ . The manuscript also explains why the role of rotational levels of  $CO_2$  was ignored in the rough estimates presented (comment #2 of referee #3).

I had earlier formally replied to comments of referees #2 and #3. I have not formally replied to comments of referees #1 and #2 because I have been in touch with them privately. The manuscript provides reference to their formal comments as well as private communications.

I hope the manuscript will be acceptable for publication in ACP.

Yours Sincerely,

Ramesh Sharma