

# Questions and Answers

The Formation of Stars and Planetary Systems, 2010, September 6-9, Särö, Sweden

Section & Talk by V. D. Hoeck

Name/Question K. Lisea

Are C/O gradients in the chemical models? What is the observational evidence for C/O in star forming regions? (e.g.  $X(O_2)$  dependence on C/O).

Name/Answer .....

# Questions / Answers

Talk by Ewine van Dishoeck

NAME / QUESTION: P. CASELLI

Can you please explain to me why do the  $\text{HDO} / \text{H}_2\text{O}$  ratios from recent Herschel observations ~~appear~~ have large uncertainties and why ~~overestimate~~ do they appear to ~~be~~ overestimates (compared to the recent interferometric observations from Jørgensen et al.)?

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NAME / ANSWER: - - - - -

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Section & Talk by V. Dishoeck (TALK BY P. CASELLI)

Name/Question P. Caselli

Your observation that  $\text{NH}_3$  gas does not show any evidence for freeze out seems at odds with the detection of  $\text{NH}_3$  ice along many lines of sight by Spitzer (Bottinelli et al. 2010) at abundances of a few % of  $\text{H}_2\text{O}$  ice. Can you comment on this?

Name/Answer PAOLA CASELLI ANSWER:

Indeed,  $\text{NH}_3$  is known to form in the gas phase through ion-molecule reactions (e.g. Roueff et al. 2005) as well as on the surface through successive hydrogenations of N. What I think we see in the gas phase of pre-stellar cores is the product of gas-phase chemistry and this product does not seem to freeze-out (especially looking at the strong  $\text{NH}_2\text{D}$  peak observed by Chapari et al 2007 ~~with~~ with PdBI toward L1544). Maybe surface ammonia forms when ~~gas phase~~ ~~hydrogen~~ ~~at~~ ~~the~~ ~~ice~~ ~~dark~~ ~~clouds~~ ~~(i.e. at~~ ~~earlier~~ ~~stages~~ ~~during~~ ~~the~~ ~~evolution~~ ~~of~~ ~~a~~ ~~molecular~~ ~~cloud~~ ~~or~~ ~~in~~ ~~shocked~~ ~~regions~~).

# Questions and Answers

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Section & Talk by v. Dr hoeck

Name/Question K. Lisea

C/O

Name/Answer .....