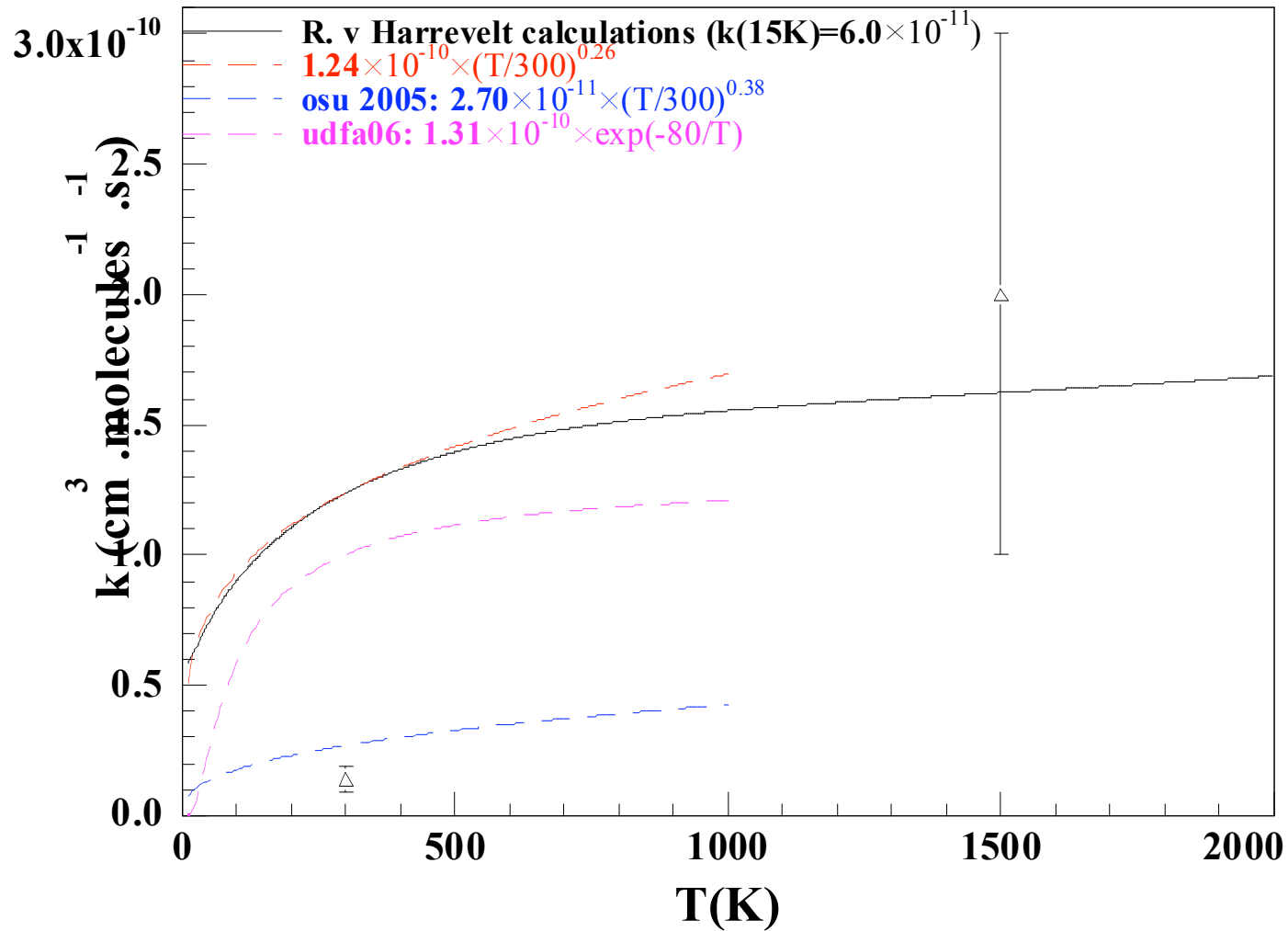


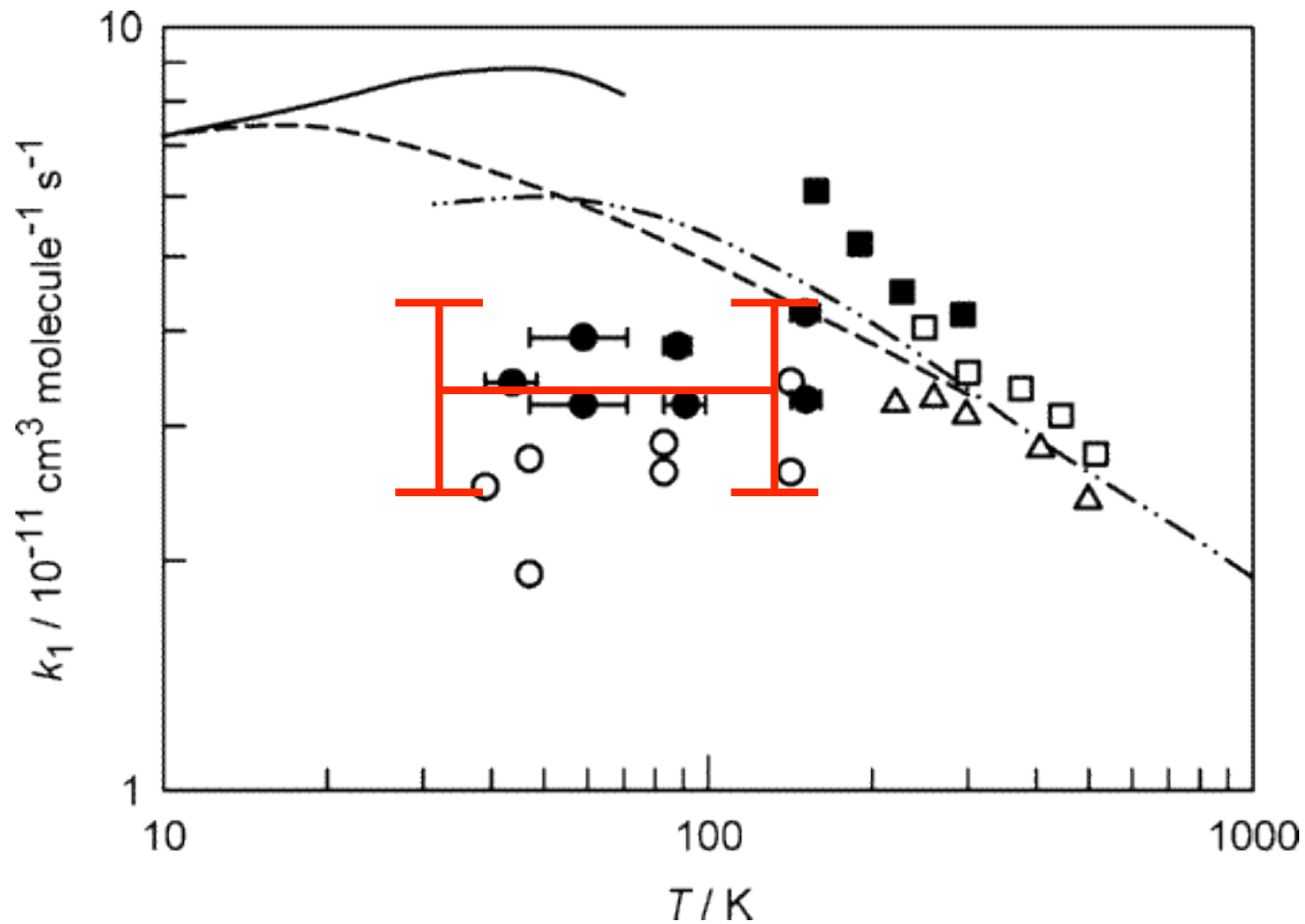
# **Some (un)important reactions, uncertainties in rate coefficients: the lack of data**

**Jean-Christophe LOISON**

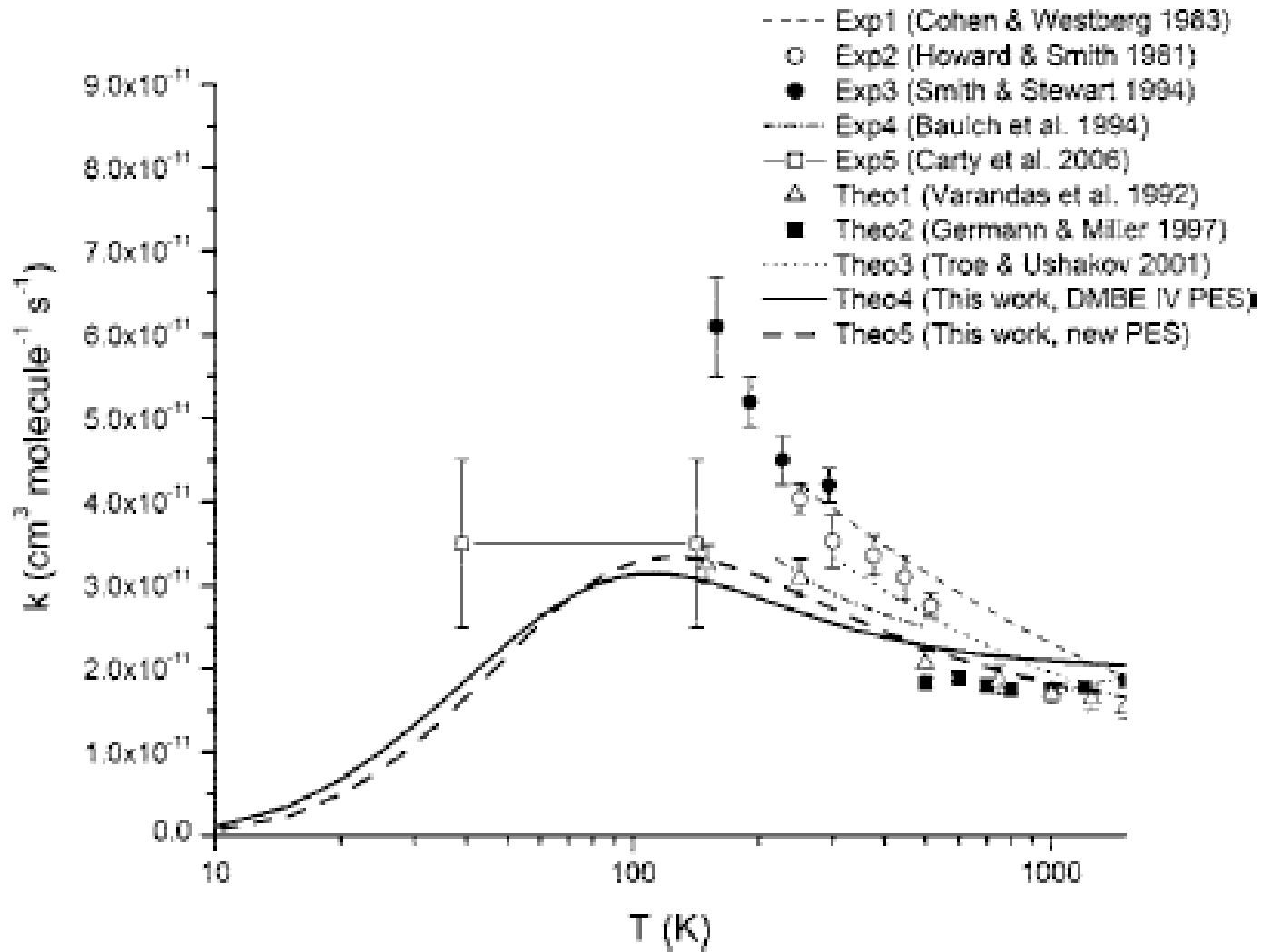
- $\text{H} + \text{CH} \rightleftharpoons \text{CH}_2 \rightarrow \text{C} + \text{H}_2$
- $\text{O} + \text{OH} \rightleftharpoons \text{OOH} \rightarrow \text{O}_2 + \text{H}$
- $\text{OH} + \text{OH} \rightleftharpoons \text{OHOH} \rightarrow \text{O} + \text{H}_2\text{O}$
- $\text{C} + \text{C}_2\text{H}_2 \rightleftharpoons \text{C}_3\text{H}_2 \rightarrow \text{C}_3\text{H} + \text{H}$   
 $\rightarrow \text{C}_3 + \text{H}_2$
  
- $\text{C} + \text{H}_2 \rightleftharpoons \text{CH}_2^* \rightarrow \text{CH}_2 + h\nu$
- $\text{C} + \text{C}_3 \rightleftharpoons \text{C}_4^* \rightarrow \text{C}_4 + h\nu$



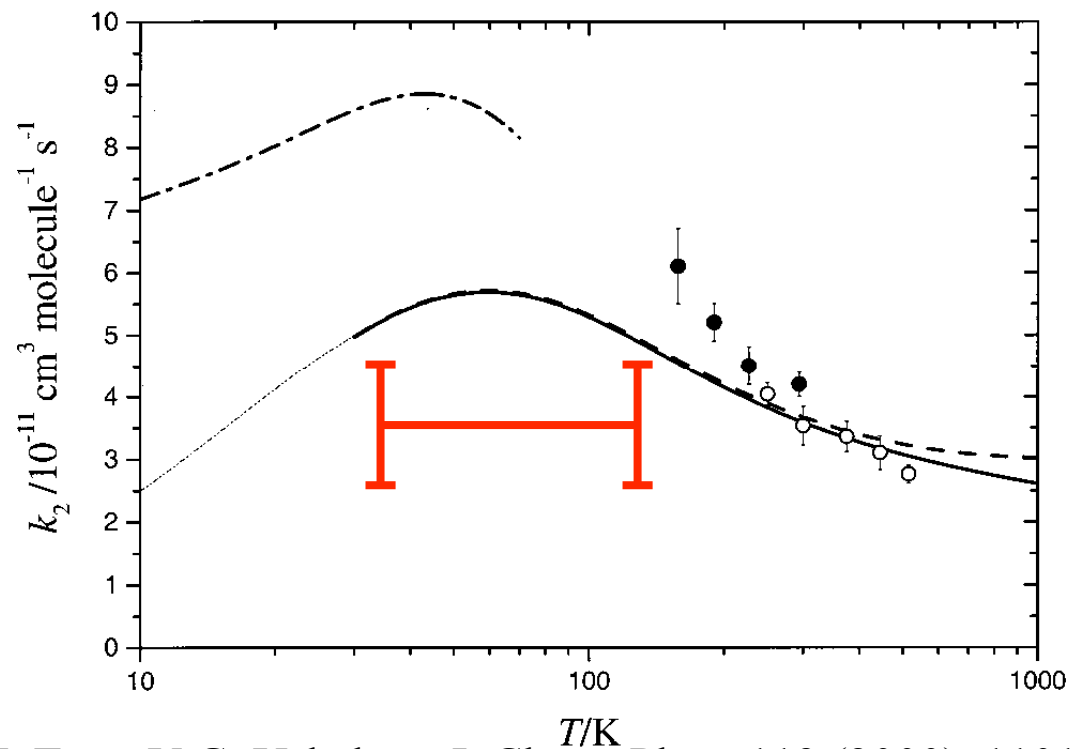
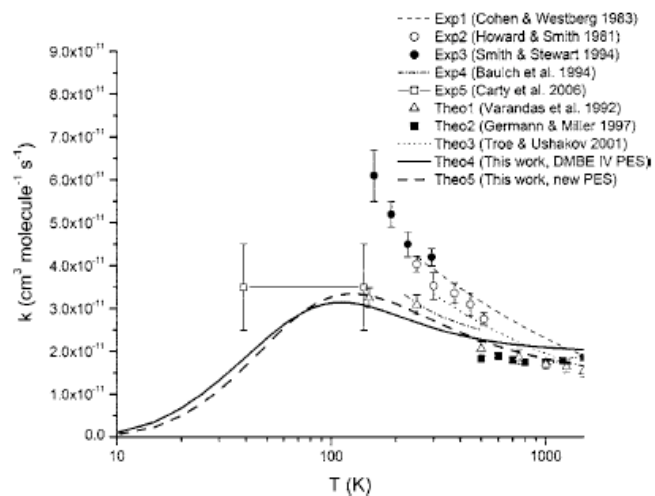
R. van Harrevelt et al, J. Chem. Phys. 116 (2002) 6002  
 Becker et al, Chem Phys Letter 154 (1989) 342  
 Dean et al, J. Phys. Chem. 95 (1991) 183



D. Carty, A. Goddard, S.P.K. Köhler, I.R. Sims and I.W.M. Smith  
J. Phys. Chem. 110 (2006) 3101.

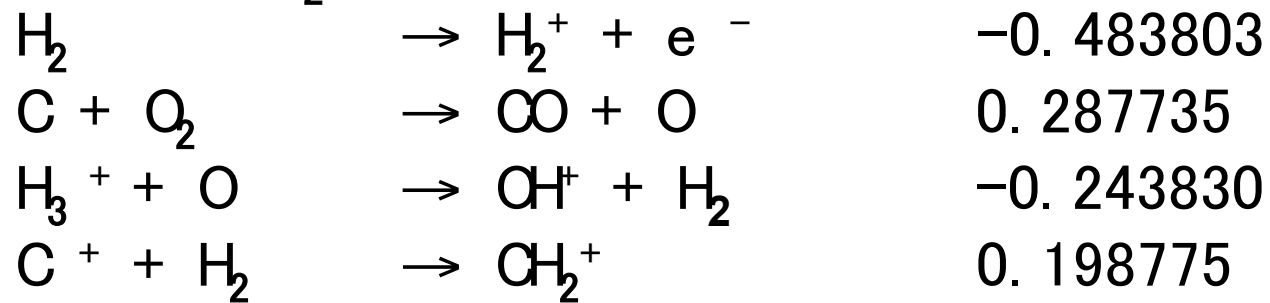


C. Xu, D. Xie, P. Honvault, S. Y. Ling and H. Guo, J. Chem. Phys. 127 (2007) 024304

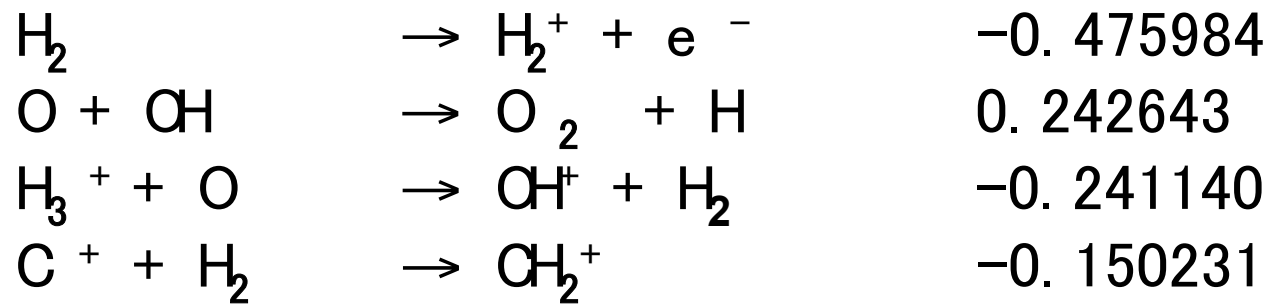


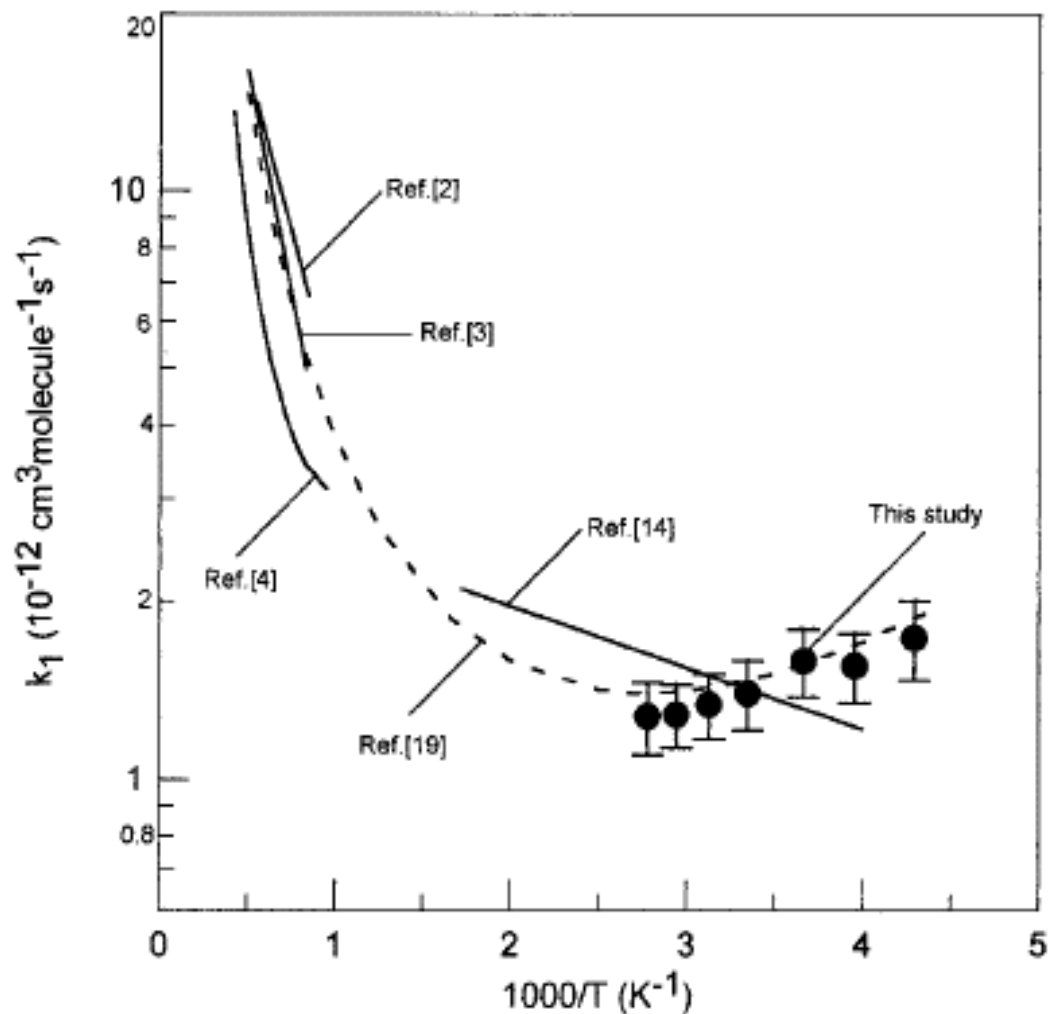
L.B. Harding, A.I. Maergoiz, J. Troe, V.G. Ushakov, *J. Chem. Phys.* 113 (2000) 11019

**Species O<sub>2</sub>**



**Species OH**



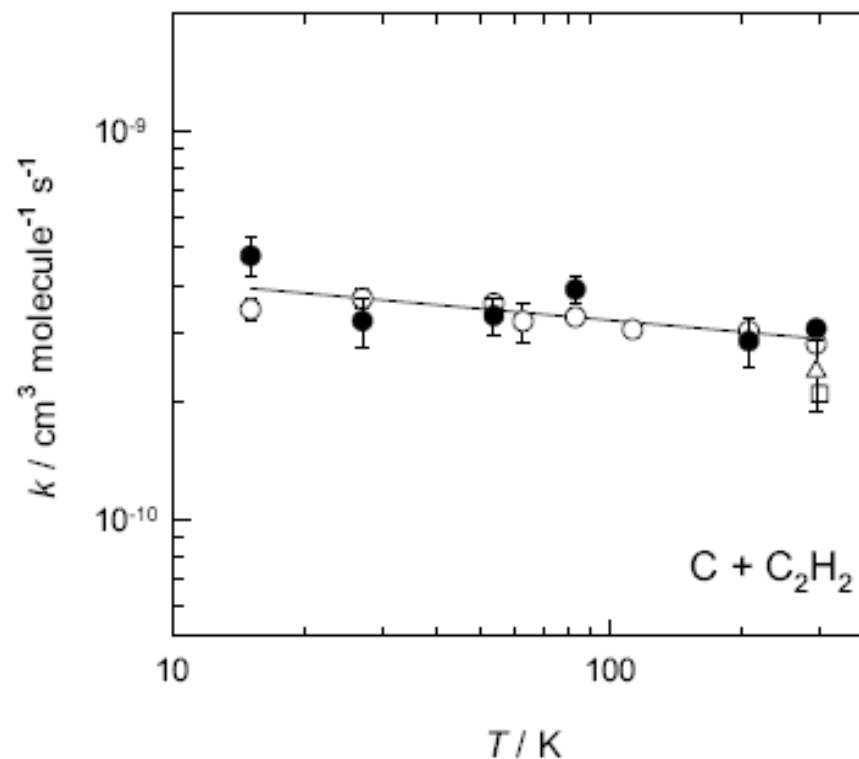
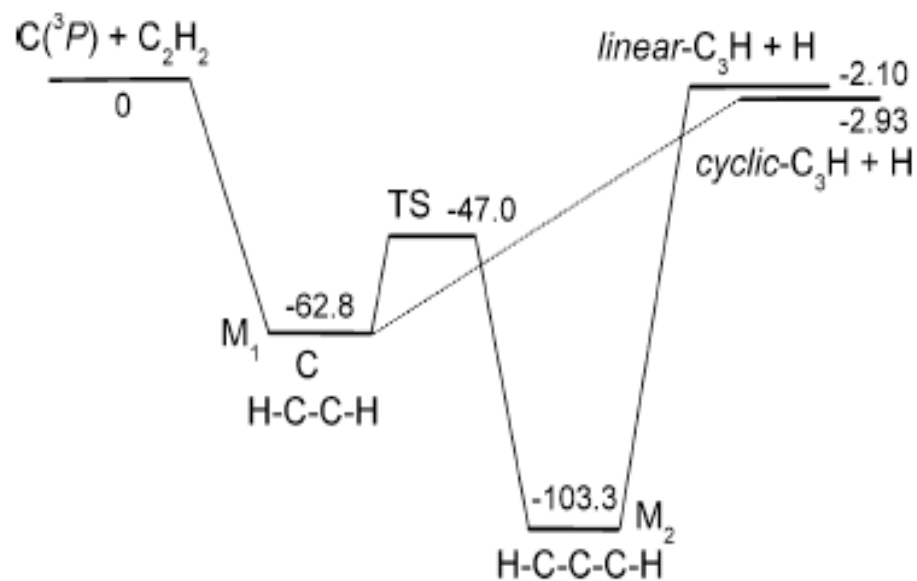
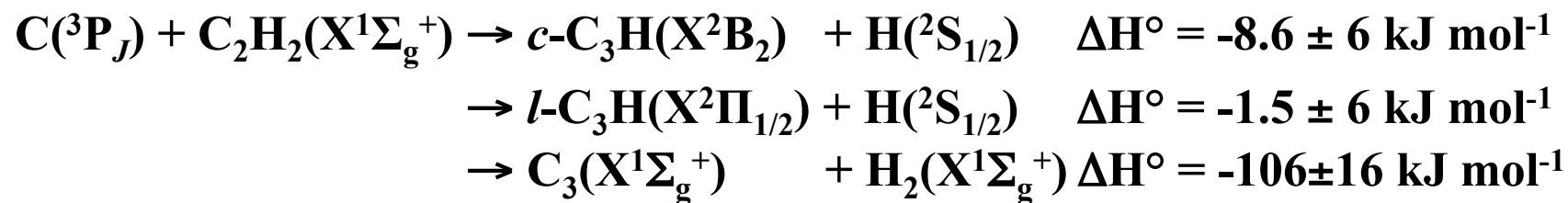


**Udfa06 and osu07:**  
 $k(15\text{K}) = 2.15 \times 10^{-15}$

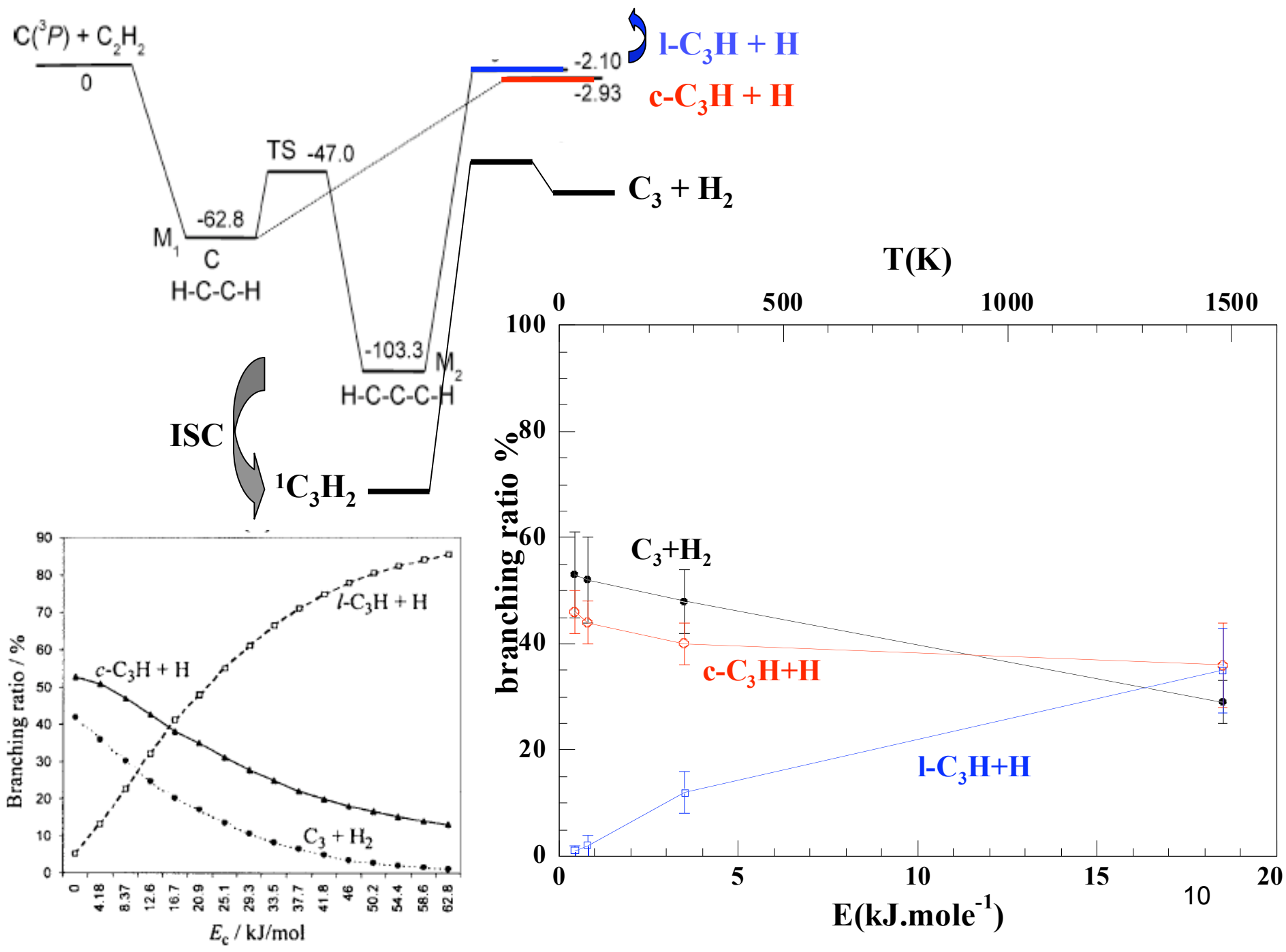
**Figure 8.** Reaction  $\text{OH} + \text{OH} \rightarrow \text{O} + \text{H}_2\text{O}$  (1): summary of results from temperature dependence studies of the reaction rate constant.

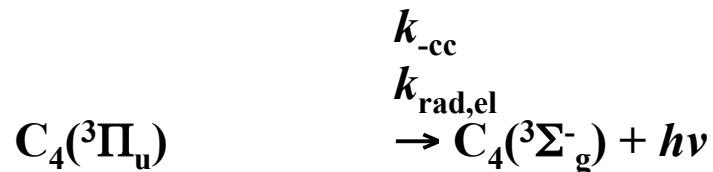
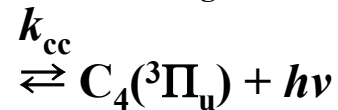
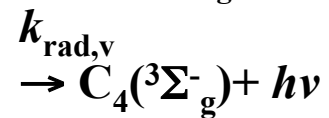
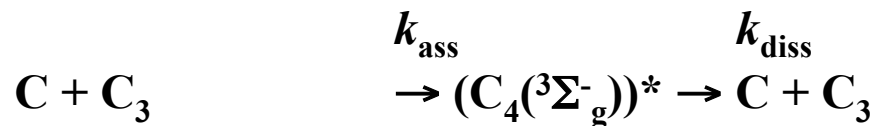
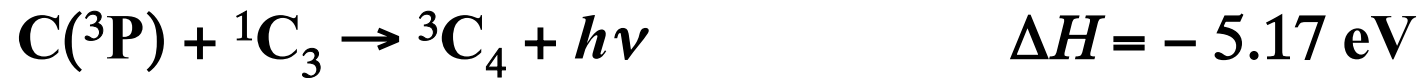
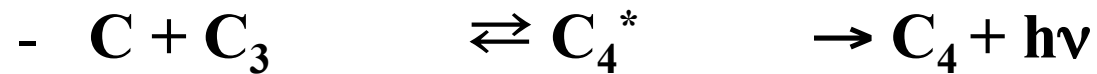
L. B. Harding, and A. F. Wagner, *22nd International Symposium on Combustion*, 983 (1988).  
 Y. Bedjanian et al, *J. Phys. Chem. A* 103 (1999) 7017.





D. Chastaing, S.D. Le Picard, I. R. Sims and I. W. M. Smith, AA 365 (2001) 241.





$$k(15\text{K}) = 1 \times 10^{-13} / 1 \times 10^{-12} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$$

# Surface chemistry

/ ion-molecules reactions

/ neutral-neutral reactions

-  $\text{CH}_3\text{OH}$ ,  $\text{HNCO}$ ,  $\text{CH}_3\text{-HC=CH}_2$  , ...