

Written comments

- 1 Title of the contribution

-2,3: Brief history on the scientific collaborations between the Perugia and Barcelona groups since the first contact at the Cortona 1980 NATO school until present days and a congratulations postcard from the Barcelona group members.

-4,5: Outline of the experimental contribution linked to complementary computational (quantum chemistry, reactions dynamics) studies on ion-molecule reactions, listing national and abroad participants.

-5,6,7,8,9 and 10: Schematic experimental of the radiofrequency guided ion beam apparatus (RF-GIB), alkali ion-benzene adducts, alkali-ion induced elimination reaction of halogen and alcohol organic compounds including experimental excitation functions, ab initio potential energy surfaces (PES) and classical and molecular dynamics (MD) simulations.

11, 12, 13: Ion-molecule reactions involving cyanide compounds of interest in interstellar clouds, comets and Titan's atmosphere and the experimental setup used in the University of Trento.

14,15,16 and 17: Experimental results and ab initio calculations done at different levels of theory on the reaction between the protonated cyclopropyl cyanide and the neutral cyclopropyl cyanide showing the formation of different adduct on the reactive PES along the reaction coordinate.

18, 19, 20, 21, 22 and 23: Computational studies using the direct or *on the fly* trajectory method for different alkali ion-halogenated molecules also experimentally studied in the group showing different frames along reactive collisions.

24, 25 and 26: Recent improvements done the RF-GIB apparatus replacing the alkali ion source by an electron impact source and showing the formation of different atomic and molecular ions in a Ar/air mixture.

27: Calibration of the electron impact ion source using the well known $\text{Ar}^+ + \text{H}_2$ reaction.

28: Acknowledgements