What did we learn from this meeting?

✓ Astrochemistry is difficult (lack of information of the object, lack of laboratory data, peculiar physical conditions and species).
✓ Estimating uncertainties in models is difficult, however, this is a new field.

Different kind of uncertainties:
Uncertainties in rate coefficients ← Can be estimated in some cases
Uncertainties in the temperature extrapolation
Uncertainties in branching ratios ← Difficult
Uncertainties in the reaction mechanisms
Uncertainties in the surface structure of grains ← Very difficult

✓ Need to identify priorities: important species, reactions etc (this is possible, maybe we can get more astrochemists to be interested in these problems)

✓ Need to educate astrochemists to make proper comparison with observations (need to educate astronomers to give proper uncertainties in observations)

✓ Need to have contact between chemists/physicists and astrochemists to know about recent measurements/ calculations and astrochemical needs.

End of February:

- most important reactions for dense clouds (different initial conditions, using freeze out, different networks and different sensitivity methods, cross-checks)
- most important reactions in PDRs? (Evelyne?)

Beginning of March:

Attribute reactions to each chemist and physicists in order to review the existing publications on the reactions, agree/disagree on the rate used in the networks, maybe propose new measurements / computations for the future.

(Between February and October:

Sensitivity to H2 formation in models

Discussion on a best way to implement the H2 formation in gas-phase models?)

October/November ? :

Discussion on the individual reactions, the H2 formation rate and the paper.

Paper

Part 1: Sources of uncertainties in each field (observations, experiments, theory, models)
Part 2: Identification of crucial reactions + discussion on their current values

KInetic Database for Astrochemistry (KIDA)

What is it?

A chemical database for Astrochemistry (interstellar medium and planetary atmospheres) that should contain all the rate coefficients currently existing.

A tool for the entire community (people who use the reactions and people who compute/measure the reactivity)

- ✓ Exhaustivity
- ✓ Up to date
- ✓ Archive
- ✓ Critical

Exhaustivity

Should contain all reactions but propose smaller networks depending on the object (clouds, shocks, atmosphere etc)

Up to date

Possibility for the chemists and physicists to update the database themselves with validation by a comity of experts.

Critical

Reactions (critical reactions for the old values and updates) need to be reviewed. All values for the rate coefficients will be included in the database but experts can propose preferred value. Discussions on specific reactions will be possible through a forum-like mode.

Comity of experts in each type of reactions

Archive

Will keep record of any modifications

Funding and working groups

Interstellar Medium

✓ GRAMIS (Groupe de réflexion en astrochimie du milieu interstellaire)
✓ ISSI Team
✓ Funded the University of Bordeaux (IPF "Young Scientist" price), the French program PCMI and ISSI

Planetary science

✓ GRAMIS
✓ Europlanet (contact: Pascal Pernot)
✓ ERC "Starting Grant" proposal (PI: Franck Selsis)

Construction of the database and the online interface by Arnaud Caillo, engineer hired by the University of Bordeaux

Why shouldn't we do it?

Too difficult to get everybody
Too many reactions
Too difficult to interest people

Yes but do we have the choice if we want to be able to focus on something else?
This is a long term project.
Better than nothing.