Stellingen

belonging to the thesis

Fire and Ice: Infrared spectroscopy as a probe of ice and gas in star-forming regions

1. The chemistry taking place on surfaces is inseparably linked to the detailed molecular structure of the surface, also in space.

   (Chapters 2, 3 and 4)

2. The similarity of the ice structure and composition in star-forming regions indicates that energetic processing of ices in dense clouds is much less important than previously believed.

   (Chapters 2, 3 and 4)

3. The step from one-dimensional lines of sight to two-dimensional mapping of ices in dense cores is a trivial, but critical, step toward a full understanding of the formation and evolution of interstellar molecules.

   (Chapters 4 and 5)

4. Detailed multi-dimensional radiative transfer models are needed to adequately interpret ice absorption bands observed toward a circumstellar disk.

   (Chapter 5)

5. High resolution mid-infrared spectroscopy of ro-vibrational molecular transitions can penetrate the envelopes of embedded protostars to constrain the physical and chemical properties of the disks within.

   (Chapter 6)

6. If a star is surrounded by a flared disk and an envelope, a shadow must be projected on the envelope.

   (Chapter 7)

7. It is easier to compare ices from different regions in space than to compare ices from different laboratories on Earth.
8. The possibility for ancient life on Mars may spawn a search for oil.
9. The focus on extreme cases in astronomy causes our perception of the average case to be distorted.
10. The Danish investment in ESO could provide a much greater scientific return if a stable career path for young astronomers existed in Denmark.
11. If the average voter understood that correlation does not imply causality, the war against Iraq would not have taken place.
12. Contrary to the fantasies of some politicians, global warming due to CO_2 emissions is potentially the greatest single threat to humanity during the next millennium.
13. The fact that there are 13 stellingen does not prove that the author is not superstitious.

Leiden, 14 october 2004
Klaus Martin Pontoppidan

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