

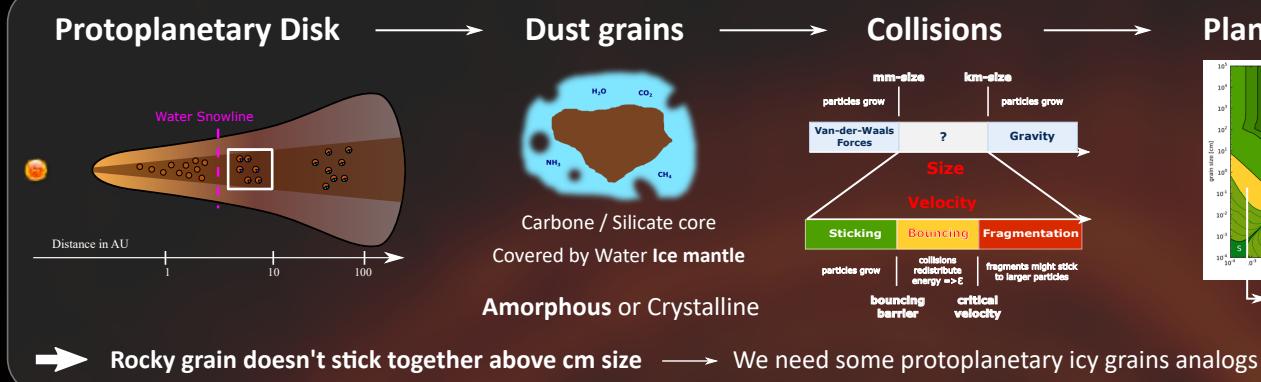


# AMORPHOUS SOLID WATER ICE PARTICLE PRODUCTION FOR COLLISION EXPERIMENTS

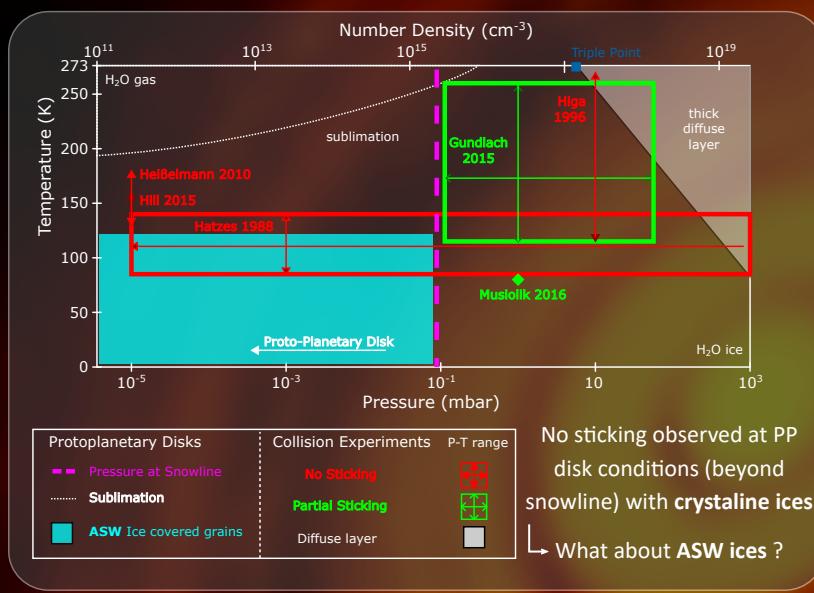


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## Motivation



## Inventory of Ice collision experiments [1] → Crystalline



## What is Amorphous Solid Water Ice ? ASW

- Solid that lack long range order
- Morphology depends on production method

### Low Temperature

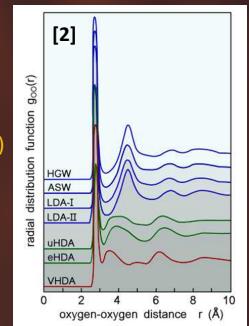
- ASW : Amorphous Solid Water (vapor)
- HGW : Hyperquenched Glassy Water (liquid)

### High pressure (from hexagonal ice)

- LDA : Low Density Amorphous ice
- HDA : High Density Amorphous ice
- vHDA : Very High Density Amorphous ice

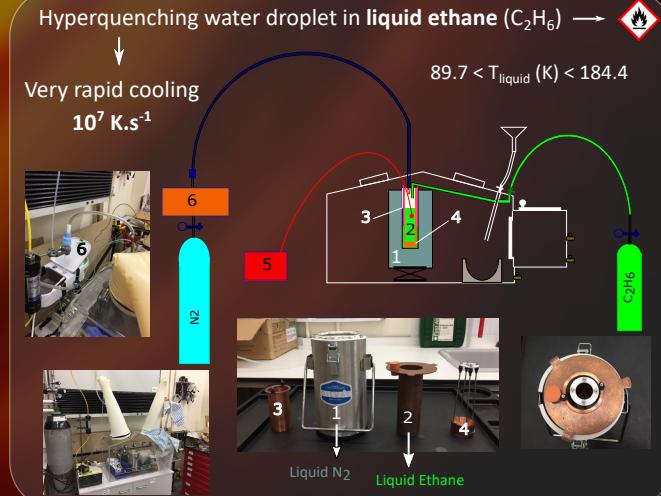
### → METASTABLE

Will rearrange in more stable crystalline phase

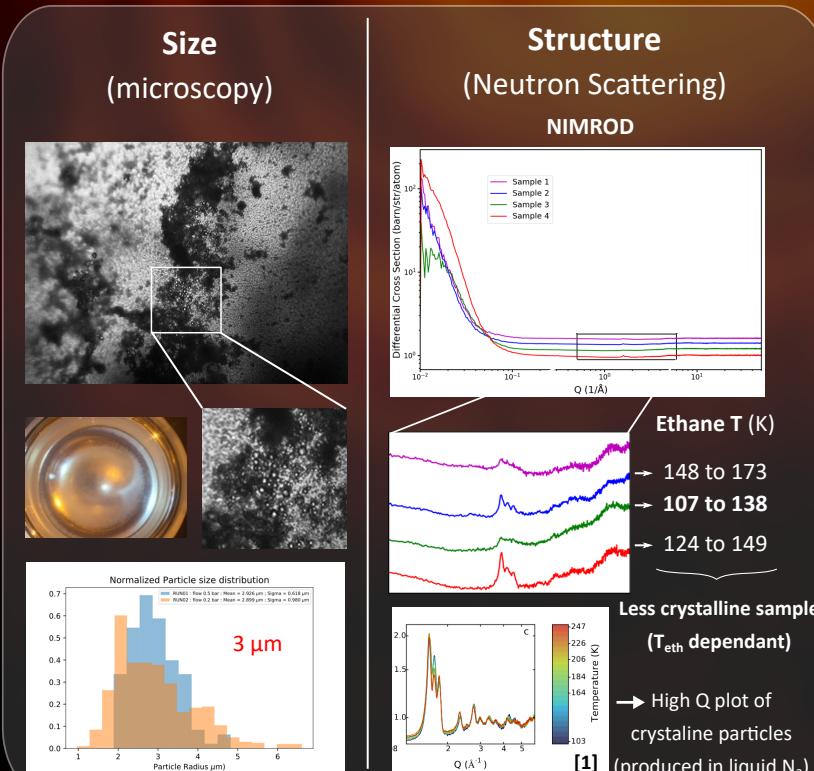


ASW is material coating dust grain  
HGw is a good analog

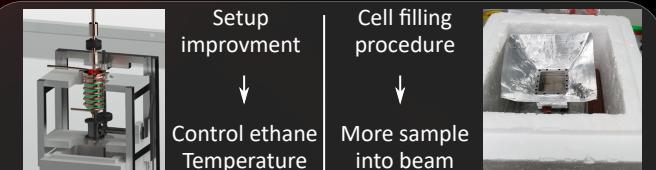
## Experimental Method → HGW μm particles



## Results → What ice particles are we producing ?



## Further steps



## Acknowledgments

Experiments at the ISIS pulsed Neutron and MuonSource were supported by a beamtime allocation on the near and intermediate range order diffractometer NIMROD from the Science and Technology Facilities Council, RB1810842

**[1]** S. Gärtner, B. Gundlach, T.F. Headen, J. Ratte, J. Oesert, S.N. Gorb, T.G.A. Youngs, D.T. Brown, J. Blum, H.J. Fraser, *Astrophys J.*, **2017**  
**[2]** D. T. Bowron, *J. Chem. Phys.*, **2006**