

# **Laser cooling and magneto-optical trapping of molecules**

Mike Tarbutt

*Centre for Cold Matter, Department of Physics, Imperial College London*

Ultracold molecules are desirable for many applications, including tests of fundamental physics, studies of strongly-interacting many-body quantum systems, quantum simulation and information processing, and ultracold chemistry. Direct laser cooling is difficult for molecules because of the many vibrational states that need to be addressed. I will present our recent work on laser cooling of CaF and YbF molecules, present our progress towards a magneto-optical trap of molecules, and explain how this new capability will be useful for quantum science, quantum technology, and fundamental physics.