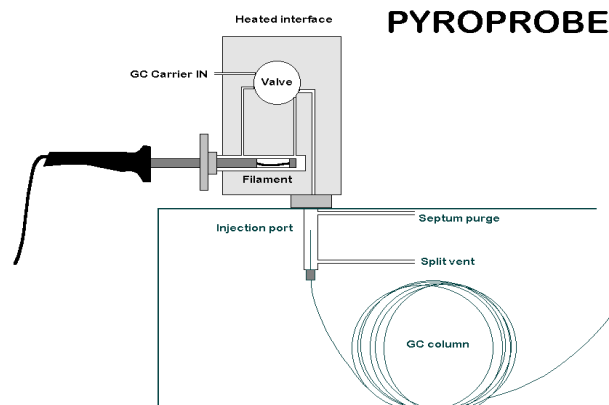




**Module 1 Exploring the organic
geochemistry of Arctic marine sediments**

Geoffrey Abbott and Mark Stevenson
¹Newcastle University

**“Bound” fraction
Analytical pyrolysis Py/GC-MS
TMAH thermochemolysis**



Refined this by thermochemolysis with tetramethylammonium hydroxide (TMAH);
We can carry out either in an on-line mode (Abbott et al., 2013; Mason, Filley & Abbott
2012; Vane, Head & Abbott 2001a) or an off-line mode (Vane, Martin, Snape & Abbott
2001b).

Techniques that do not require milling of sediment Characterise mineral-bound organic compounds

- X-ray photoelectron spectroscopy (XPS)
- Time-of-flight secondary ion mass spectrometry (ToF SIMS)

XPS

- X-rays with energy $h\nu$ eject the core electrons of the atoms present on the surface
- The kinetic energy KE is measured and thus the binding energy BE of the electrons is obtained
$$BE = h\nu - KE - \phi$$
- Spectra: intensity is plotted as a function of the binding energy

