



**16<sup>th</sup> May 2013 - 10:00 a.m.**  
 Building 99, Seminar Rooms I+II (EG)

## Don McNaughton

School of Chemistry, Monash University, Australia

### Millimeter wave , FTMW and FTIR spectroscopy for interstellar chemistry

The pure rotational spectra of the bicyclic aromatic nitrogen heterocycle molecules, quinazoline (1), phthalazine (2) and quinoxaline (3) have been recorded and assigned in the region 13–87 GHz. An analysis, guided by *ab initio* molecular orbital predictions, of frequency-scanned Stark modulated, jet-cooled millimeter wave absorption spectra (48–87 GHz) yielded a preliminary set of rotational and centrifugal distortion constants. Subsequent spectral analysis at higher resolution was carried out with Fourier transform microwave (FT-MW) spectroscopy (13–18 GHz) of a supersonic rotationally cold molecular beam. The high spectral resolution of the FT-MW instrument provided an improved set of rotational and centrifugal distortion constants together with nitrogen quadrupole coupling constants for all three species.

