SIGNATURES OF ICES IN SPECTRA OF TNOs AND CENTAURS: PECULIARITIES AND PROBLEMS IN THEIR INTERPRETATION. C. de Bergh[1], M.A. Barucci[1], F. Merlin[1], and A. Guilbert[1, 1]LESIA-Observatoire de Paris (5 place Jules Janssen, 92195 Meudon, France, catherine.debergh@obspm.fr).

Visible and near-IR spectroscopy of the brightest (the only ones for which good enough data can be obtained) TNOs and Centaurs has shown that only few objects have signatures in their spectra. The signatures detected are essentially due to ices. Results of some of these observations are discussed by Guilbert et al. (this meeting).

We present here some peculiarities of the spectra and some limits in their interpretation:
1) the water ice seems to be always present in the crystalline state, even at the surface of small objects that are not prone to internal evolution. What does this mean ?
2) in some cases where water ice is detected, the band at 1.5 micron is absent (or much weaker than it should be compared to the band at 2 micron). What is it due to ?
3) absorptions of methane ice are detected in visible spectra of two TNOs (Eris and 2005 FY9) below 0.7 micron that have not been seen elsewhere (in particular, they do not appear in spectra of Pluto and Triton). These weak absorptions have not been studied in the laboratory.
4) wavelength shifts of some methane ice absorption bands are interpreted as being due to the presence of nitrogen ice, but is this the only possible interpretation ? And how much nitrogen would be required ?
5) in Charon (and maybe also Orcus) spectra, a weak band is detected around 2.2 microns that is currently assigned to some ammonia hydrate, but this interpretation relies on a single feature, and surface models cannot be run to secure it because of a lack of optical constants for such species.
6) the wavelength position of the 1.65 micron band of crystalline water ice has been used to get some information on the surface ice temperature, but this measurement is hampered by an insufficient knowledge of how irradiation affects the position of the band.

More generally, there is a lack of: optical constants, laboratory studies for temperatures appropriate for these objects (in the 20-60 K range), data on ice mixtures and mixtures of ices with other types of materials (minerals and/or carbonaceous materials), studies on the effects of irradiation on the spectra.