



**Appunti di Fisica '14
&
Dottorato di Ricerca in Fisica**

**13 marzo ore 15:00
Sala seminari, CNR-IPC-F**

**Influence of packing
on low energy vibrations of densified glasses**

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A comparative study of Raman scattering and low temperature specific heat capacity has been performed on samples of B_2O_3 , which have been high-pressure quenched to go through different glassy phases having growing density to the crystalline state. It has revealed that the excess volume characterizing the glassy networks favors the formation of specific glassy structural units, the boroxol rings, which produce the boson peak, a broad band of low energy vibrational states. The decrease of boroxol rings with increasing pressure of synthesis is associated with the progressive depression of the excess low energy vibrations until their full disappearance in the crystalline phase, where the rings are missing. These observations prove that the additional soft vibrations in glasses arise from specific units whose formation is made possible by the poor atomic packing of the network.

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