**Refinement of High Pressure Metrology to 150 GPa**

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In static high pressure experiments, the pressure cannot be directly measured. Therefore, secondary pressure scales must be used, such as luminescence gauges (like ruby) and x-ray gauges (gold, platinum, MgO, etc.). The calibration of these gauges is a critical issue: for instance, geophysical studies of the Earth's mantle transition zone minerals under high pressure and temperature have revealed to be inconsistent because of the use of incompatible pressure gauges [1]. We have measured ambient temperature equations of state of 13 metals (Be, Al, Fe, Co, Ni, Cu, Zn, Mo, Ag, Ta, W, Pt, Au) under quasi-hydrostatic conditions in a diamond anvil cell, up to at least 65 GPa and at a maximum pressure of 153 GPa. The use of state of the art pressurizing and x-ray diffraction techniques [2] allowed us to obtain standard synchrotron x-ray diffraction accuracy in the volume determination to the maximum pressure. This data set can been used to re-calibrate the static pressure scale based on the ruby luminescence wavelength measurement [3]. The accuracy of various forms of luminescence wavelength vs. pressure in different pressure ranges will be discussed. In particular, this recalibration confirms recent suggestions of an underestimation of pressure by [3] at ultra-high pressure.

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