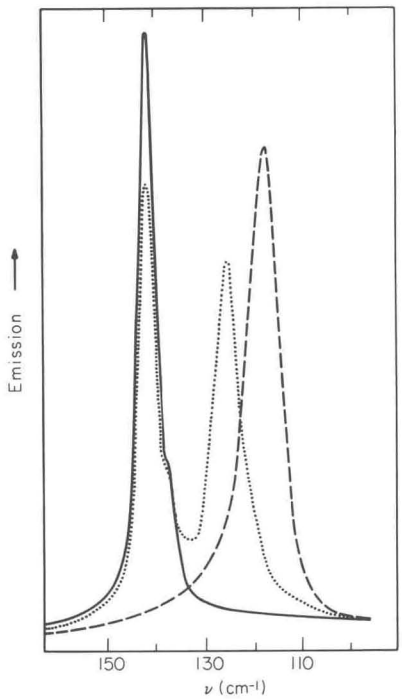

FIG. 11. The spectra of HgI_2 at various pressures: (– – –) atmospheric pressure (red phase only), peak at 119 cm^{-1}; (· · · ·) intermediate pressure (red and yellow phases present), peaks at 126 and 143 cm^{-1} and a weak shoulder at 138 cm^{-1}; (———) high pressure (yellow phase only), peak at 143 cm^{-1} with a weak shoulder at 138 cm^{-1}.

IV. Limitations of Technique

The above applications have been presented to attempt to illustrate the potential use of the high-pressure technique for study of molecules in the low-frequency range. The technique is new and much work remains to be done. Further, a better understanding is necessary as to what mechanisms are involved when a material is under pressure stress, and more work with gaskets and with hydrostatic pressures is needed. A problem involving the pressure calibration of the diamond anvil cell merits prime consideration. Certainly, precautions are necessary when using the average pressures obtained in the diamond anvil cell, and relating these to other pressure data. This is particularly dangerous in attempts to obtain quantitative data such as anharmonic contributions in ionic crystals. For qualitative work the use

of an average pressure appears quite satisfactory. The technique has warranted the attention it has received in the past few years. Although it may never realize all of its potentials ultimately, it has already been demonstrated that this technique is a valuable tool for the chemist, physicist, spectroscopist, and solid-state scientist.

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