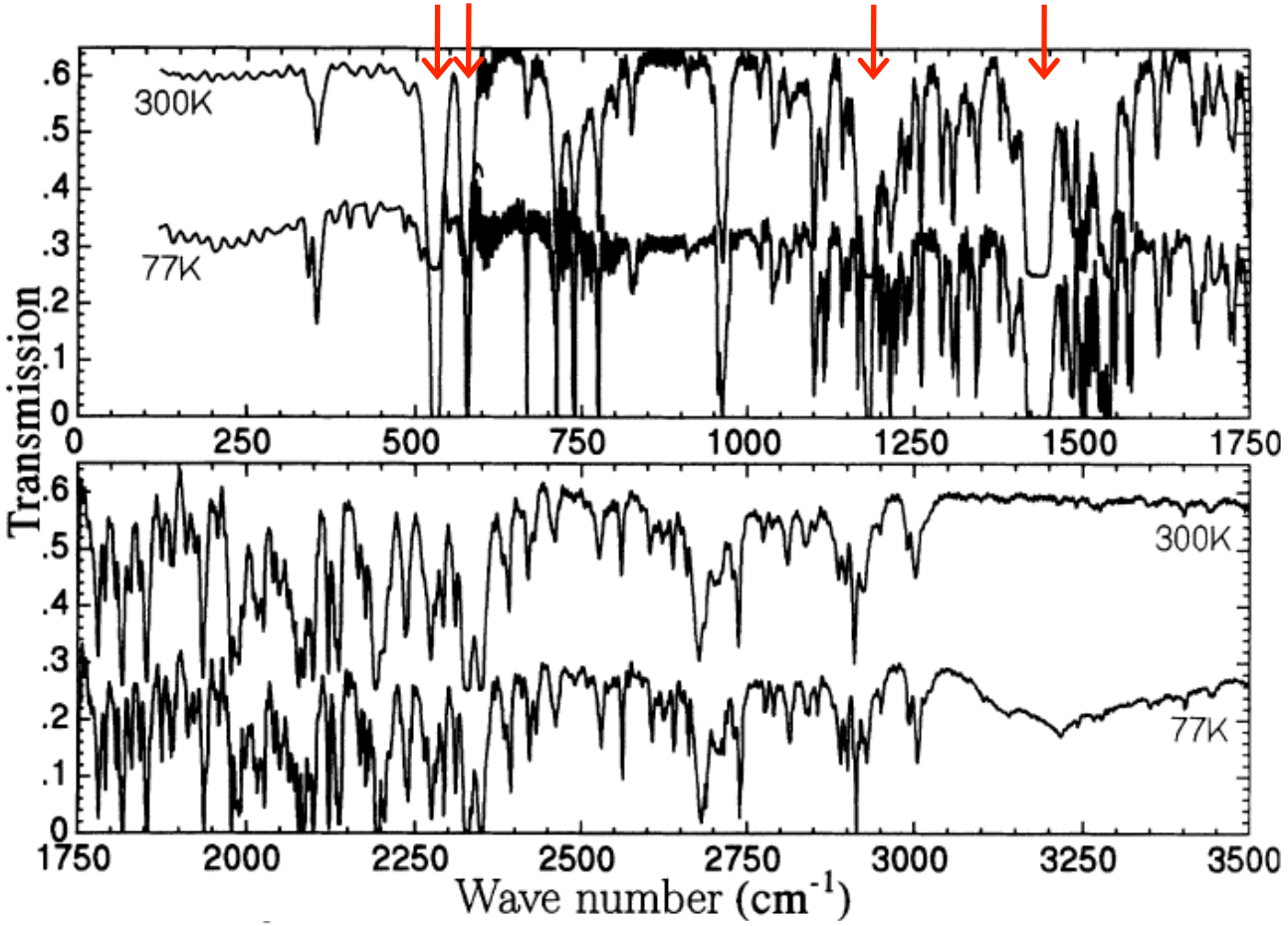
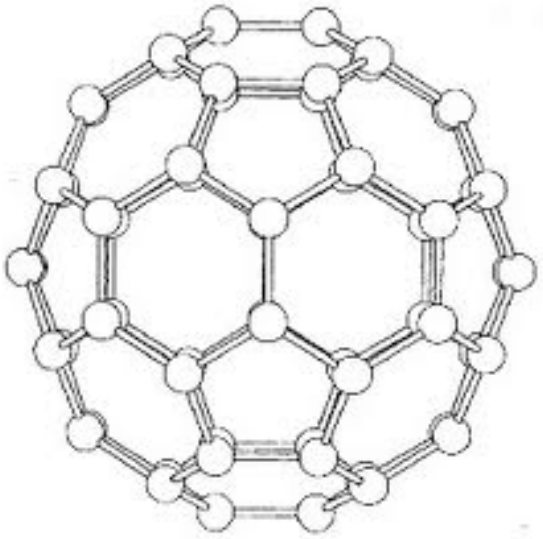


FIG. 2. C_{60} single crystal infrared transmission spectra at 0.5 cm^{-1} resolution obtained at 300 K and 77 K. The upper 300 K spectrum is vertically shifted by 0.25 for clarity.



The truncated icosohedral structure of C_{60} fullerenes belongs to the icosohedral point group, I_h, and has four infrared-active intramolecular vibrational modes with F_{1u} symmetry. There are also 10 Raman-active vibrational modes: 2 with A_g symmetry and 8 with H_g symmetry. All 14 of these modes have been experimentally observed with great precision by many researchers.[9–12] Thirty-two additional modes that are IR and Raman forbidden (silent modes) are $1A_u$, $3F_{1g}$, $4F_{2g}$, $5F_{2u}$, $6G_g$, $6G_u$, and $7H_u$.