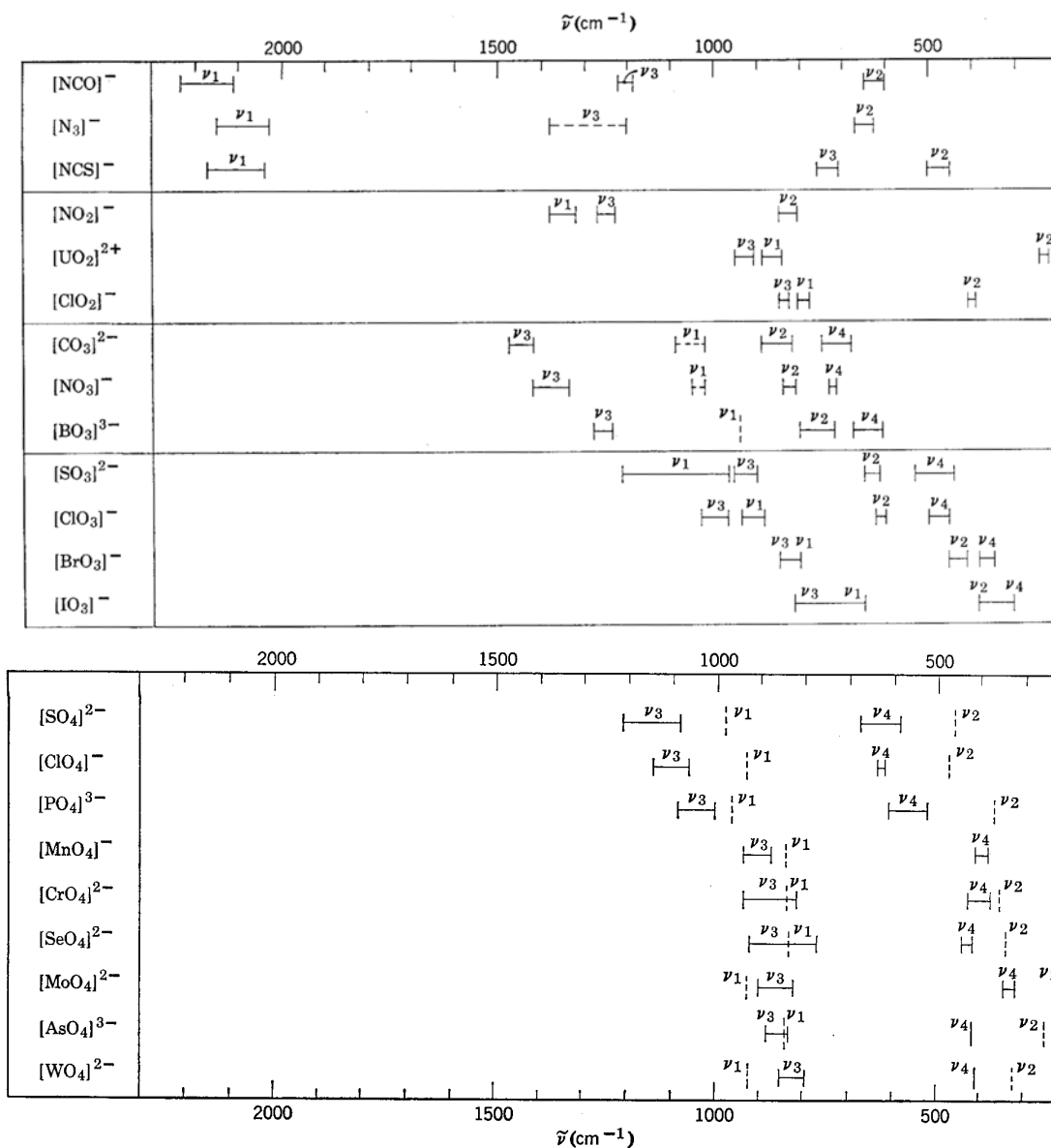


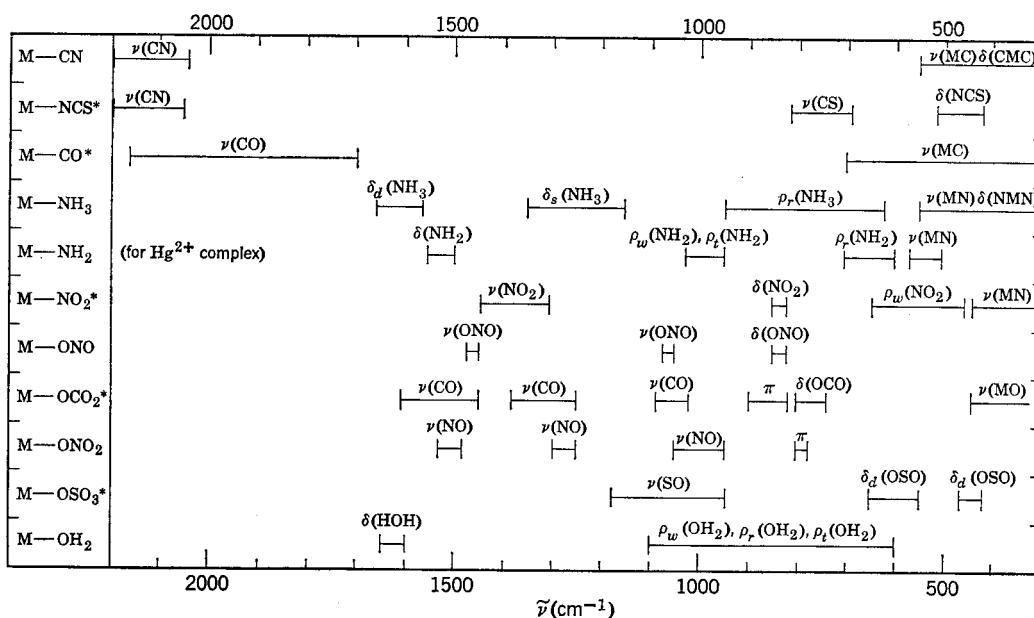
## Typical Vibrational Frequencies for Inorganic Species<sup>1</sup>



**Figure 1.**<sup>2</sup> Observed frequency ranges for polyatomic ions. See reference 2 for a description of the vibrations associated with each frequency. Raman active bands are shown as dashed lines.

$\text{BF}_4^-$	$\text{PF}_6^-$	$\text{HCO}_3^-$	$\text{NO}_2^-$	$\text{NH}_4^+$
1128	913	1295	1328-1375	3125
1107	830	1035	1261-1270	1401
1088	557	1000		
1077		838		
1063				
1038				

**Table 1.** Approximate IR frequencies (in  $\text{cm}^{-1}$ ) of other common polyatomic ions not shown in Figure 1.<sup>3</sup>



**Figure 2.**<sup>2</sup> Metal-ligand vibrations. See reference 1 for a complete discussion of the motions associated with each vibration. The ranges for species marked with an ‘\*’ include both bridged and non-bridged compounds. Whether a particular vibration is IR or Raman active depends on the particular geometry about the metal center.<sup>2, 4, 5, 6</sup>

### References

1. <http://www2.truman.edu/~jmccormi/Chem475/Laboratory/VibrationalFrequencies.htm>
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