

9.8: Term Symbols for Polyatomic Molecules

Term symbols are used to designate electronic states of polyatomic molecules, much the same as they are used to designate electronic states for both atomic systems and diatomic molecules. These can be derived in much the same manner as we have developed for diatomic molecules, by taking combinations of atomic orbitals, whose symmetries have been decomposed from the spherical symmetry of the atoms to the lowered symmetry of the molecule.

An example would be H_3^+ , which is the most common triatomic ion in the universe. (It is also an excellent example of a three-center two-electron bond in so far as it is the simplest example of a molecule possessing such a bond!) The combination of three 1s orbitals on the three atoms will yield three molecular orbitals. The decomposition of symmetry is described in the following section.

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