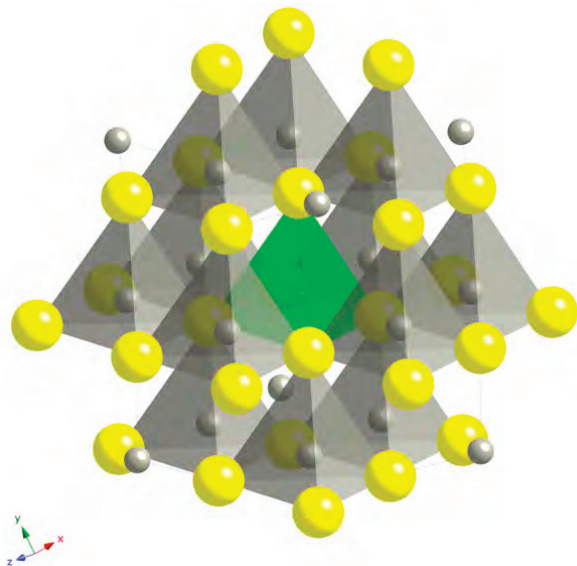
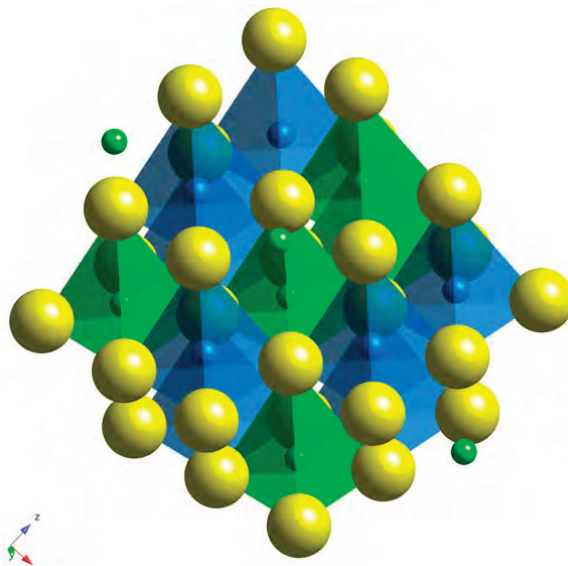


a) Cu replacing one Zn in sphalerite



b) Cu in chalcopyrite



local environment within 6 Å of central Cu atom

**Supplementary Figure 1.** Local environment of (a) a single Cu atom substituting a Zn atom in sphalerite; and (b) a Cu atom within chalcopyrite.