

HIGHLIGHTS AND BREAKTHROUGHS

Pauling's rules, in a world of non-spherical atoms

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Abstract: The electron density distribution in a mineral is measurable, and in some ways, provides all the information required to understand the properties of minerals. Through the analysis of the electron density distributions of a large variety of mineral species, Gibbs et al. (2014) examine and challenge the fundamental tenet of Pauling's Rules, which is that atoms are spheres of a single fixed size. Their analysis provides an updated model of crystal chemistry that is both self-consistent and does what new models should do, explains the older ones.

Keywords: Electron density distribution, Paulings rules, non-spherical atoms