

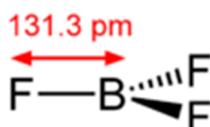
Question #84648, Chemistry / General chemistry

"BF₃, PF₃ and ClF₃ are AX₃ type of molecules, but their structure and bond angles are different"-
Explain

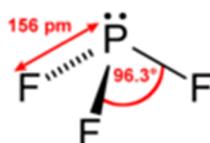
Answer

Difference in their structure and angles come from the electronic structure of the center atom.

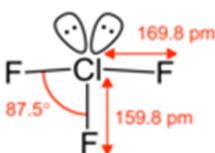
BF₃ is a trigonal planar molecule as expected for the standard AX₃ type molecule. Such geometry provides optimal minimum repulsion between the fluorine atoms.



PF₃ is a trigonal pyramid derived from the tetrahedron state, where lone pair of the phosphorous occupies top position.



ClF₃ is a T-shaped due to the chlorine having two lone pair occupying two equatorial positions of a hypothetical trigonal bipyramid.



You do not need to copy images, they're provided just for the context.