

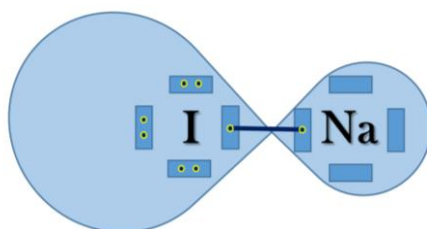
Answer on Question #72293 – Chemistry – Inorganic chemistry

Question:

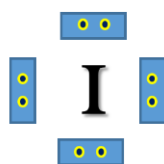
Draw an electron density map for the iodide ion in sodium iodide showing any effect the sodium ion has on the iodide ion. Hint: The iodide ion gets polarized. The answer to this question on my exam paper shows a distorted iodide ion electron cloud with *four shells* Isn't the iodide ion supposed to have 5 shells? Could you elaborate why they have drawn four shells?

Answer:

If we will look at the sodium iodide molecule from the polarization theory, we will see, that electronic density will locate on the iodide ion, because of higher value of electronegativity compare to sodium (that is why iodide ion polarized). On the figure below one can conclude moving of electronic cloud to iodide.



Each element from the Periodic system has a number of valence electrons on the outer sphere. This value can change from 1 to 8 (from Group 1 to Group 18). There are also some virtual shells, and amount of filling shells corresponds to amount of paired valence electrons of element (for both they are shown in dark blue on the figure above). A number of unpaired electrons shows how much bonds element can form. In case of Sodium and Iodine elements, they have by one unpaired electron. As a result formation of bond.



Iodide ion has 1 electron more than it needs by nature. Their localization is shown on the figure above. This type of representation names a distorted electron cloud of an ion.