

# Kentucky Class Notes

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859.252.NOTE

CHE 230 Meier  
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Test 1

1/14/11

- Function → structure and reactivity → electronic structure →  $E\Psi = \hat{H}\Psi$  (quantum mechanics)
- Benzene (figure 1): the drawing involves the electrons that “count” or are most important
  - The nucleus is there to determine the number of electrons
- Two important phrases of organic chemists: Nuclei are cute, electrons are everything
- If you do not know where the electrons are, all is lost.
- Lewis Dot Structures
  - Carbon (figure 2)  $1s^2 2s^2 2p^2$
  - Boron (figure 3)  $1s^2 2s^2 2p^1$
  - Nitrogen (figure 4)  $1s^2 2s^2 2p^3$
- **OCTET RULE**- every element needs a full shell which includes eight electrons, except hydrogen
  - Rule of thumb: 8 is good, less is acceptable, more is forbidden
  - Ammonia  $\text{NH}_3$  (figure 5) there is a lone pair on nitrogen
  - $\text{H}_2\text{O}$  (figure 6)  $1s^2 2s^2 2p^4$
  - $\text{H}_3\text{O}^+$  (figure 7) Total number of electrons on oxygen = -7  
Total number of protons on oxygen = +8  
Formal charge on oxygen = +1
  - $\text{NH}_4^+$  (figure 8) Total number of electrons on nitrogen = -6  
Total number of protons on nitrogen = +7  
Formal charge on nitrogen = +1