

## ChemActivity 26

### Solutions -- The Bond-Type Triangle

#### Exercises

- |    |                   |              |                     |
|----|-------------------|--------------|---------------------|
| a) | CO <sub>2</sub>   | 3.08 by 1.07 | covalent            |
| b) | NH <sub>3</sub>   | 2.68 by 0.77 | covalent            |
| c) | BaO               | 2.24 by 2.73 | ionic               |
| d) | SO <sub>2</sub>   | 3.10 by 1.02 | covalent            |
| e) | AlSb              | 1.80 by 0.37 | semimetal           |
| f) | GaAs              | 1.98 by .045 | semimetal           |
| g) | CdLi              | 1.20 by 0.59 | metallic            |
| h) | BaBr <sub>2</sub> | 1.78 by 1.81 | ionic               |
| i) | ZnO               | 2.60 by 2.01 | covalent/ionic line |
| j) | NaH               | 1.58 by 1.43 | metallic/ionic line |
- |    |      |    |                  |    |                |
|----|------|----|------------------|----|----------------|
| a) | CdLi | b) | SiO <sub>2</sub> | c) | O <sub>2</sub> |
| d) | CuZn | e) | CuSn             | f) | GaAs           |
- |    |          |    |          |
|----|----------|----|----------|
| a) | metallic | b) | covalent |
|----|----------|----|----------|

#### Problems

- B could be AgCl. The average electronegativity should be higher than that of SnI<sub>4</sub> given that Cl has an electronegativity significantly higher than I. This also implies that the difference in electronegativity between Ag and Cl is greater than that between Sn and I.
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|-------------------------------|--|
| CO <sub>3</sub> <sup>2-</sup> | covalent bonding between C and O   |
| BaCO <sub>3</sub>             | ionic bonding between Ba <sup>2+</sup> and CO <sub>3</sub> <sup>2-</sup> and covalent bonding within CO <sub>3</sub> <sup>2-</sup> between C and O |
| CaSO <sub>4</sub>             | ionic bonding between Ca <sup>2+</sup> and SO <sub>4</sub> <sup>2-</sup> and covalent bonding within SO <sub>4</sub> <sup>2-</sup> between S and O |
| NaClO <sub>4</sub>            | ionic bonding between Na <sup>+</sup> and ClO <sub>4</sub> <sup>-</sup> and covalent bonding within ClO <sub>4</sub> <sup>-</sup> between Cl and O |