CHM 320 Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

In class lab assignment

**Molecular Symmetry – Point Group Determination (with Gummies!)**

**Directions:** Make gummies and toothpick models of the following structures and complete the table. This sheet will be collected at the beginning of class on Wednesday, September 18. What you do not complete in class today will become part of the homework. You will get a majority of the points for trying to answer, and all of the points by answering correctly and completely.

For the 3rd column, “Symmetry elements”, use the point group assignment to go through and list the applicable symmetry elements as you go along. (Note you may not need to know all of the symmetry elements to correctly assign the point group, but you should put all of the symmetry elements in the column to gain partial credit in the event that the point group is misidentified).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Compound | 3-D Structure | Symmetry Elements | | Point group |
| CH2Cl2 |  |  | |  |
| Ni(CO)4 |  |  | |  |
| CH2IBr |  |  | |  |
| C2H2 |  |  | |  |
| CO |  |  | |  |
| Compound | 3-D Structure | Symmetry Elements | Point group | |
| B(OH)3 |  |  |  | |
| Fe(CO)6 |  |  |  | |
| *trans*-Co(en)2Cl2 |  |  |  | |
| *trans*-Pt(NH3)2Cl4 |  |  |  | |
| Ni(CN)5 |  |  |  | |
| [CrBr2ClI3]4- |  |  |  | |
| [Pt(CN)4]2- |  |  |  | |

|  |  |  |  |
| --- | --- | --- | --- |
| Compound | 3-D Structure | Symmetry Elements | Point group |
| C3H4 |  |  |  |
| [FeCl6(en)2]2- |  |  |  |
| Staggered  Ni(cyclobutadiene)2 |  |  |  |
| [Co(en)3]3+ |  |  |  |