

For the following questions you are required to show if each complex is either cis/trans or fac/mer. Use the refcodes stated and explain your answers fully with aid of a diagram.

1. AMPCO

2. CLECO

3. AGIQR

4. BIMXOK

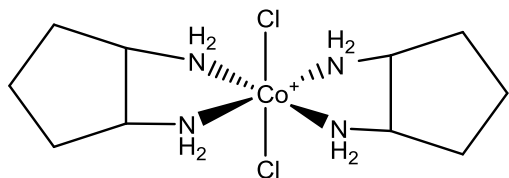
5. ABAFUF

6. ACAMPT

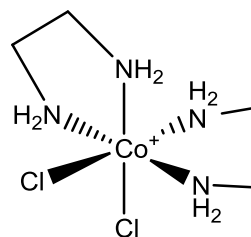
7. Load up the refcode XEBBUC and concentrate on the Ni complex. Rotate the molecule so one bond is pointing directly at the screen. Draw the mirror image of the molecule. Can you rotate the molecule to form the mirror image you have just drawn? What does this mean?

Answers

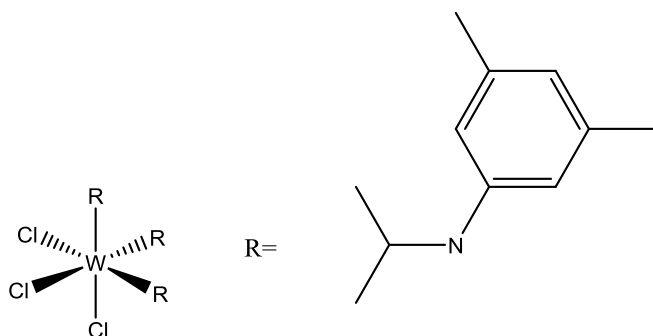
1. Trans because Cl groups opposite each other with 180° angle.



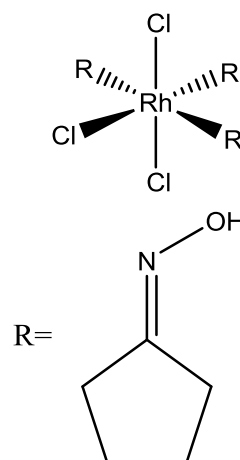
2. Cis because the ligands on the same side of the metal and not opposite



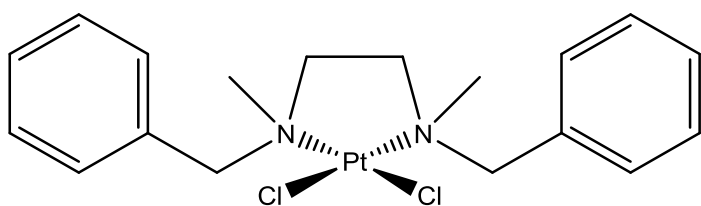
3. Fac because both sets of the same ligand are on the same face.



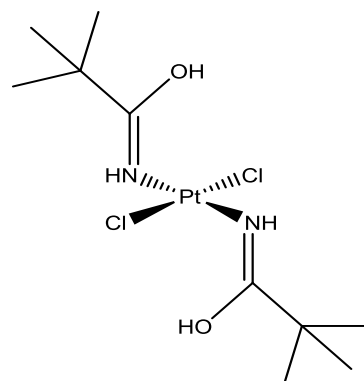
4. Mer because each set of identical ligands has a plane passing through them.



5. Cis because same groups are on the same side of the metal and are not opposite.



6. Trans because same groups are adjacent.



7. The mirror images cannot be imposed onto one another. This means they are optical isomers.

