Bonding Details – ChemEd

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Before bonding | | after bonding | |  |  |  |  |
| **S.No** | **Target** | **Source** | **Target** | **Source** | **bond** | **type** | **order** |  |
| 1 | uPair(00) | uPair(00) | bPair(00) | bPair(00) | Sigma | Covalent | Single | If EN difference <= 1.7 |
| 2 | uPair(00) | uPair(00) | bPair(00) | bPair(00) | ionic | electrovalent | Single | If EN difference <= 1.7 |
| 3 | uPair(00) | uPair(00) | BPair(00) | bPair(00) | Sigma | Covalent | Double |  |
| uPair(00) | uPair(00) | BPair(00) | bPair(00) | pi | Covalent | Double |  |
| 4 | uPair(00) | uPair(00) | BPair(00) | bPair(00) | Sigma | Covalent | Double |  |
| uPair(00) | uPair(00) | BPair(00) | bPair(00) | pi | Covalent | Double |  |
| uPair(00) | uPair(00) | BPair(00) | bPair(00) | pi | Covalent | Double |  |
| Special Bonding | | | | | | | | |
| 5 | lPair(00) | uPair (00) | BPair(00) | bPair(00) | sigma | Coordinate | Single | No pairing, d- orbital available |
| 6 | lPair(00) | uPair (00) | BPair(+1) | bPair(00) | sigma | Coordinate | Single | No pairing, no d- orbital, e-loss |
| 7 | lPair(00) | uPair (00) | BPair(+1) | bPair(-1) | sigma | Coordinate | Single | pairing |
| 7 | lPair(00) | Vacant (00) | BPair(+1) | bPair(-1) | sigma | Coordinate | Single |  |

Organometallic bonding (Bonding between Metal atom and Carbon)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Before bonding | | after bonding | |  |  |  |  |
| **S.No** | **Target** | **Source** | **source** | **Target** | **bond** | **type** | **order** |  |
| 1 | uPair(00) | uPair(00) | bPair(00) | bPair(00) | OrganoMetallic | Covalent | Single |  |
| 2 | Pi(00) | Vacant(00) | Pi(00) | Vacant(00) | interaction | Supra  molecular |  |  |
| 3 | lPair(00) | Vacant(00) | lPair(00) | Vacant(00) | interaction | backbond |  |  |

Coordination compound bonding (bonding between Central Metal Ions and Ligands)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Before bonding | | after bonding | |  |  |  |  |
| **S.No** | **Target** | **Source** | **source** | **Target** | **bond** | **type** | **order** |  |
| 1 | lPair(00) | Vacant (00) | BPair(00) | bPair(00) | Dative | Coordinate | Single |  |
| 2 | lPair(-1) | Vacant (00) | BPair(00) | bPair(-1) | dative | Coordinate | Single |  |