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| **Raise CO IR stretching frequency** | **Lower CO IR stretching frequency** |
| Decrease in backdonation | Increase in backdonation |
| Higher metal oxidation state | Lower metal oxidation state |
| Pi acid trans to CO | Pi donor trans to CO |
| Weak sigma donor coordinated | Strong sigma donor coordinated |
| More CO ligands on metal | Fewer CO ligands on metal |
| Higher effective nuclear charge on metal | Lower effective nuclear charge on metal |
| More electronegative metal | Less electronegative metal |
| CO bound to only one metal | CO bridging two or more metals |
| Shorter C-O bond | Longer C-O bond |
| Longer M-C bond | Shorter M-C bond |
| Higher C-O bond order | Lower C-O bond order |
| Higher energy CO stretch | Lower energy CO stretch |