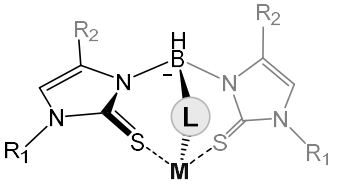
Claims

1. A sensor compound comprising a metal atom and a mercaptoimidazolyl multidentate ligand, wherein the mercaptoimidazolyl multidentate ligand further comprises a pyrazolyl group or an indolyl group, and wherein the metal atom is Cu(I), Ag(I) or Au(I).

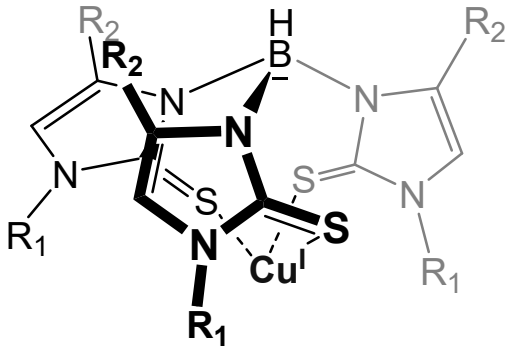
2. The sensor compound of claim 1, wherein the compound has formula (I)



(I)

where each instance of R_1 and R_2 can be hydrogen, or a group having one or more carbons, M is Au(I), Ag(I) or Cu(I), and L is a pyrazolyl group, a mercaptoimidazolyl group, or an indolyl group.

3. The sensor compound of claim 1, wherein the compound has formula II



(II)

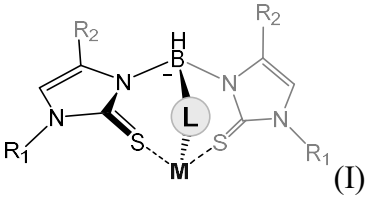
where each instance of R_1 and R_2 can be hydrogen, or a group having one or more carbons.

4. A sensor composition comprising a sensor compound and a metal dichalcogenide wherein the sensor compound comprises a metal atom and a mercaptoimidazolyl multidentate ligand.

5. The sensor composition of claim 4, wherein the metal atom is Cu(I), Ag(I) or Au(I).

6. The sensor composition of claim 4 or 5, wherein the mercaptoimidazolyl ligand further comprises a pyrazolyl group or an indolyl group.

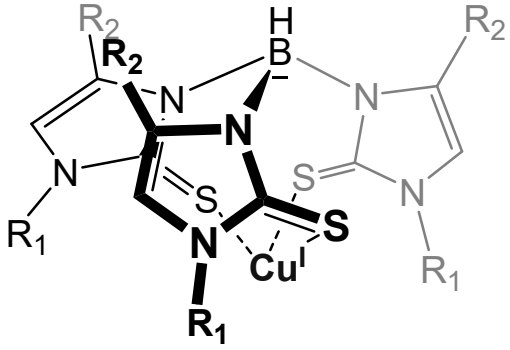
7. The sensor composition of claim 4, wherein the sensor compound has formula (I)



(I)

where each instance of R_1 and R_2 can be hydrogen, or a group having one or more carbons, M is Au, Ag or Cu, and L is a pyrazolyl group, a mercaptoimidazolyl group, or an indolyl group.

8. The sensor composition of claim 4, wherein the sensor compound has formula II



(II)

where each instance of R_1 and R_2 can be hydrogen, or a group having one or more carbons.

9. The sensor composition of any one of claims 4-8, wherein the metal dichalcogenide comprises MoS_2, WS_2, $MoSe_2$, WSe_2, $MoTe_2$, WTe_2, and combinations thereof.