

Chromo-fluorogenic detection of carbon monoxide.

Back in 1911, canaries were traditionally used in coal mines as an early detection system against life threatening gases such as carbon dioxide, carbon monoxide and methane. The canary, normally a very songful bird, would stop singing and eventually die in the presence of these gases, signaling to the miners to exit the mine. Although considered as moderately toxic compared to other highly poisonous gases, carbon monoxide (CO) detection has always been of vital importance as it lacks color, odor or taste and it is present in numerous natural and artificial environments.

Simple chromo-fluorogenic detection of carbon monoxide in air has been achieved using a novel ruthenium(II) complex containing 2,1,3-benzothiadiazole (BTD) and pyrenylvinyl ligands. The probe shows remarkable sensing behavior such as a clear color change to the naked eye from orange to yellow at carbon monoxide concentrations of 100 ppm in air. The complex also displays a turn-on emission in the presence of carbon monoxide. Color and turn-on emission modulations are due to a displacement of the BTD ligand through coordination of CO.

