Quick, accurate water detection possible

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Scientists at Israel's Weizmann Institute say they've developed a method of water detection and measurement that's both rapid and accurate.

Water occurring in fuels and lubricants can cause motors to sputter, metal parts to rust, or chemical reactions to go awry. Existing industrial water tests are complicated and time-consuming.

The technique was developed in the Weizmann lab of Milko van der Boom. He and postdoctoral fellow Tarkeshwar Gupta created a versatile film on glass that is only 1.7 nanometers thick.

The film can measure the number of water molecules in a substance even when it contains only a few parts per million. In the sensor, metal complexes embedded in the film steal electrons from the water molecules.

When the number of electrons in the metal complexes changes, so does their color, and that change can be read optically. The test can be conducted in as little as five minutes, and the molecular film can be returned to its original state by washing it with a simple chemical.

The researchers are exploring the possibility of adapting the method to testing for trace amounts of such substances as metal ions or gasses.

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