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RESEARCHERS CREATE NEW MATERIAL FROM BUCKYBALLS

Sensors that can monitor humidity quickly and accurately are one possible application of a new material based on the buckyball recently developed by scientists at the University of California, Santa Barbara.

Galen D. Stucky, professor of chemistry and materials, and post-doctoral fellow Andrew P. Saab created the new material which was recently described in the journals *Advanced Materials*, *Chemical and Engineering News*, and *Chemistry and Industry*.

Buckyball is the nickname for the versatile carbon molecule known as C₆₀, which scientists named "Buckminsterfullerene" after the American architect R. Buckminster Fuller who designed geodesic domes in a round soccer-ball shape.

Buckyballs or fullerenes are the roundest, most symmetrical. The tough new material recently created at UCSB resulted from 'doping' or insertion of atoms of the metal potassium into a thin film of

buckyballs, making the material into a superconductor. Then the thin film was oxidized by water and oxygen under an intense xenon light.

The electrical resistance of the resulting thin film is sensitive to

humidity and is particularly effective in low humidity where it is better than state-of-the-art solid state humidity sensors, according to researchers. In the range of zero to five percent humidity the film is six times more sensitive than humidity sensors now in use. The film also boasts a rapid response; it responds quickly enough to follow a person breathing from 30 centimeters away.

The researchers are quick to point out that the new fullerene is not yet viable technology in its current state. Stucky states, "Although the material certainly has potential for humidity sensing applications, it will require a further research and development effort aimed specifically at technical applications before the real usability of the material is known."

If and when the new material becomes usable, it might be applied in technologies used in diverse settings where a quick, reliable check of humidity is a critical element. Examples might range from monitoring humidity in the manufacture of electronics equipment to checking storage conditions in museums and art galleries. Large molecules known. This third form of carbon--diamonds and graphite being the other two--was discovered in 1985. Then, in the early nineties a convenient way of making the molecule was found, further encouraging researchers to explore the properties of the molecule.

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