

Analyzing food and beverages with magnetic levitation

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Foods and beverages, such as cheese and milk, may be tested for their fat content in the future with a new sensor that uses magnetic levitation, or "maglev," the technology that allows high-speed trains to float above the tracks.

Scientists are reporting development of a new use for magnetic levitation, or "maglev," the futuristic technology best known for enabling high-speed passenger trains to float above the tracks. In ACS' *Journal of Agricultural and Food Chemistry*, they describe putting maglev to use in an inexpensive sensor for analyzing food, water, and other beverages.

George Whitesides and colleagues note that measurements of a substance's density are important in the [food](#) industry, health care, and other settings because they provide key information about a substance's

[chemical composition](#). Density measurements, for instance, can determine the sugar content of soft drinks, the amount of alcohol in wine, or whether [irrigation water](#) contains too much salt to use on a farmer's field. Existing devices for making those measurements are far from ideal, and a need exists for simpler, less expensive, easy-to-use technology.

The scientists describe development of a special sensor that uses maglev to meet those needs, suspending solid or liquid samples with the aid of magnets to measure their density. About the size of an ice cube, the sensor consists of a fluid-filled container with magnets at each end. Samples of different materials can be placed inside, and the distance they migrate through the fluid provides a measure of their density.

The scientists showed that the device could quickly estimate the salt content of different water samples and the relative fat content in different kinds of milk, cheese, and peanut butter. "Potential applications of maglev may include evaluating the suitability of [water](#) for drinking or irrigation, assessing the content of fat in foods and beverages, or monitoring processing of grains (e.g., removing husk or drying)," the article notes.

More information: "Magnetic Levitation in the Analysis of Foods and Water", *Journal of Agricultural and Food Chemistry*.

Provided by American Chemical Society

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