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WARF touting tech for analyzing soft materials

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The Wisconsin Alumni Research Foundation is seeking partners to help commercialize a new method for analyzing the properties of soft materials.

According to an info sheet from WARF, which handles patenting and licensing for UW-Madison technologies, researchers at the university have developed a specialized portable device called a vibrometer that can assess the strength and durability of these materials.

The device measures “acoustic emissions,” which occur in solid materials when they experience changes to internal structure such as a crack or other deformation. It measures variables such as amplitude, frequency and duration of these signals from “incredibly small fractures” at various locations, an overview from WARF shows.

According to this info sheet, acoustic emissions testing has been used for hard materials such as ceramics and concrete to gather data for structural testing and monitoring. But it “has yet to be widely studied” in soft materials.

Currently, softer materials are usually tested and analyzed with destructive methods that involve bending, puncturing, indenting or cutting. This is done for a wide array of applications such as food processing and medical devices, but WARF says an “efficient, minimally invasive technique that works in real time is needed.”

The specialized vibrometer was developed by Melih Eriten and Corrine Henak, both assistant professors in the university’s Mechanical Engineering Department.

Their team has tested it using gelatin-based materials of various compositions, creating fractures in these materials and measuring the acoustic emissions. Using their readings, they were able to determine the “failure properties” of the materials, providing insight on their structural capabilities.

See more details on the invention here:

https://www.warf.org/technologies/summary/P220230US01/