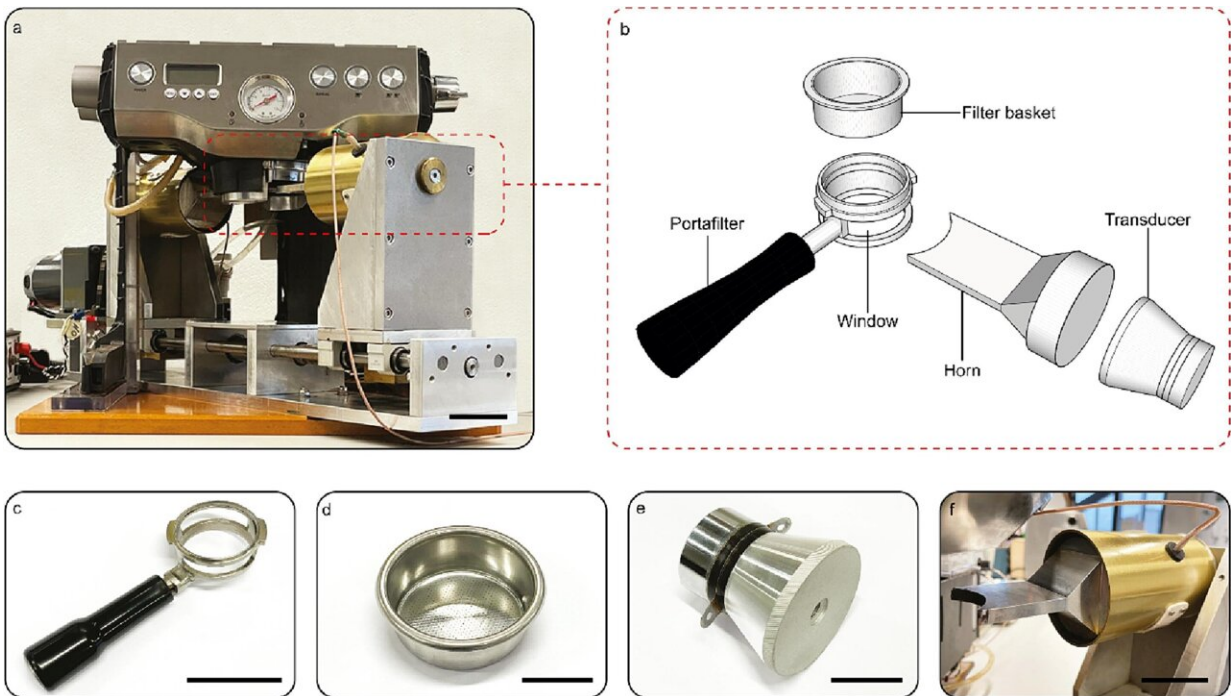


# Australian engineers develop an ultrasonic cold brew coffee machine

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Customized ultrasonic coffee brewing machine. a) Photograph of the machine. b) Schematic of the parts for the ultrasound transmission into the coffee basket. c-f), Photographs of the portafilter (with corresponding window), filter basket, transducer, and the horn, respectively. Credit: *Ultrasonics Sonochemistry* (2024). DOI: 10.1016/j.ultsonch.2024.106885

A new method to deliver a quality cold brew coffee in less than three minutes solidifies Australia's position as the innovators of modern

coffee, according to researchers from The University of Queensland.

Engineers from University New South Wales developed an ultrasonic machine to speed up the cold brew of ground coffee beans—a process that normally takes 12 to 24 hours. The [research](#) was published in *Ultrasonics Sonochemistry*.

Postdoctoral researcher Dr. Jaqueline Moura Nadolny said UQ scientists then tested this brew, finding the taste would satisfy fans of cold brew who rave about its smoother, less acidic and less bitter qualities.

"Once again, Australia has new technology at our fingertips that moves us from traditional methods of coffee making to modern methods, giving consumers a new premium experience," Dr. Nadolny said.

"Our trained sensory panel tastings proved that we can achieve a taste profile very similar to either a traditional cold brew or an espresso in the time it takes to brew a hot espresso."

The UNSW team led by Dr. Francisco Trujillo superimposed their own patented sound transmission system on an existing coffee machine model.

The system connects a bolt-clamped transducer with the brewing basket via a metallic horn—transforming the coffee basket into a powerful ultrasonic reactor.

Dr. Trujillo said the ultrasound process speeds up the extraction of the oils, flavors and aroma of the ground coffee.

"We're able to demonstrate that this can be adapted to an existing espresso machine," he said.

"We are very excited about developing this technology, which can be used by companies that already manufacture coffee machines, so consumers will be able to enjoy a 3-minute ultrasonic cold brew at home.

"This also opens the door for [coffee shops](#) and restaurants to produce on-demand brews comparable to 24-hour cold brews, supplying the rising demand while eliminating the need for large semi-industrial brewing units and extensive refrigeration space."

UQ sensory scientist and flavor chemist Professor Heather Smyth said the method had potential to expand Australia's international reputation as coffee connoisseurs.

"We have some of the best brewers in the world, and here we have another Australian invention that delivers premium coffee experiences in an innovative way," Professor Smyth said.

"Further work could explore different types of beans from different regions."

"And for companies or cafes that specialize in single origin or high-quality beans, this would be another string to the bow to show off yet another sensory dimension of coffee."

**More information:** Shih-Hao Chiu et al, Coffee brewing sonoreactor for reducing the time of cold brew from several hours to minutes while maintaining sensory attributes, *Ultrasonics Sonochemistry* (2024). [DOI: 10.1016/j.ultsonch.2024.106885](https://doi.org/10.1016/j.ultsonch.2024.106885)

Provided by University of Queensland

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