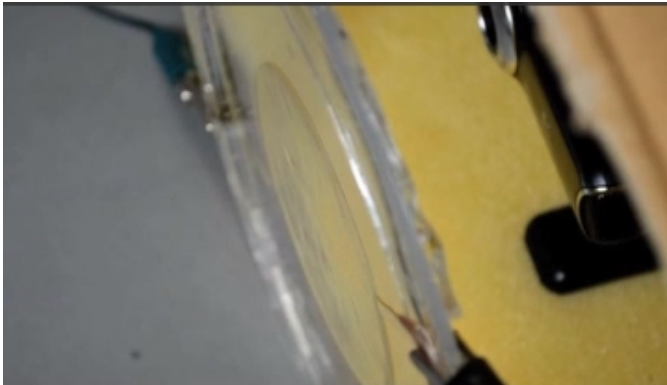


## Saltwater + Polymers = Speakers?

Written by Marco Attard  
03. 09. 2013

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A Harvard University research team proposes a novel recipe for almost-invisible stretchy speakers ideal laptops, mobile devices and noise-cancelling windows-- a mixture of saltware and polymer creating a "hydrogel."



As detailed in a paper called "Stretchable, Transparent, Ionic Conductors," hydrogel speakers take inspiration from the flow of electrical signals via ions (not electrons) in the human body.

Seawater is rich in free-flowing dissolved ions. Mixed with a polymer it creates the hydrogel, a flexible yet solid substance.

The actual speaker consists of a thin sheet of transparent, insulating rubber between 2 layers of gel connected to copper electrodes. Electrical signals from an audio source pass to the hydrogel via electrodes, causing the ions to flow. The movement of the ions causes the rubber in the middle to vibrate at specific frequencies, creating sound.

Such technology can have many different applications, New Scientist says-- one can "coat" TV, laptop or smartphone displays with a hydrogel speaker, or create soundproof windows by using the film to generate noise-cancelling vibrations.

Wearable electronics could also benefit, since the material stretches up to X5 its length without increase in resistivity.

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However hydrogels still have a problem-- while being inexpensive and easy to make such materials are not long lasting, and will dry out as soon as their water evaporates. Team leader Zhigang Suo describes the current work as more of "a proof of concept," and is currently on the hunt for alternative flexible ionic conductors less prone to evaporation.

Go [Bio-Inspired Speakers Use Clear Gel to Play Music \(New Scientist\)](#)

Go [Stretchable, Transparent Ionic Conductors](#)