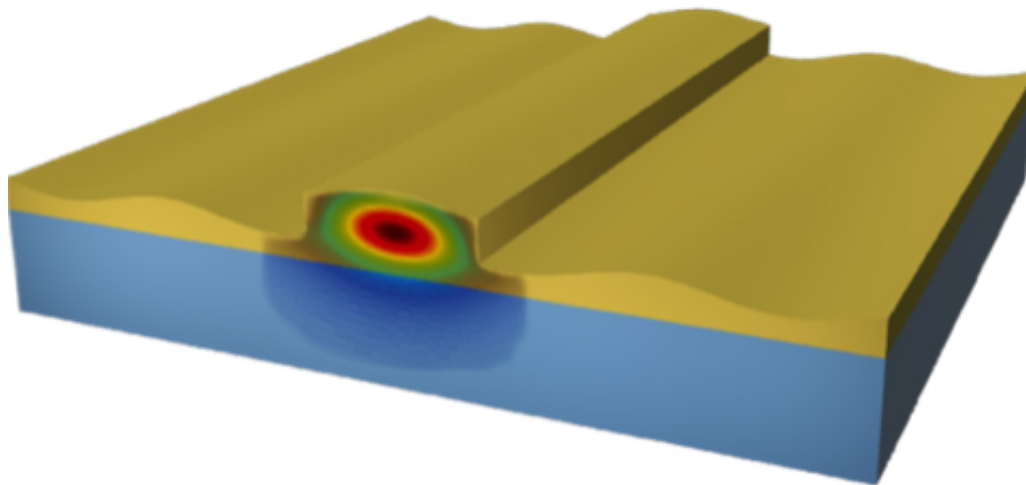


## Best of Last Week – Earth's invisible shield, a sound loud enough to bend light on a chip and toxic e-cigarettes

December 1 2014, by Bob Yirka

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The figure illustrates a sound wave passing across an integrated optical waveguide, overlaid with a color map of the light field in it. Credit: University of Minnesota

(Phys.org) —It was a big week for discovery as a [Star Trek-like invisible shield was found thousands of miles above Earth](#)—it's in the Van Allen radiation belt and appears to protect the planet below from "killer electrons." Meanwhile, [a 23,000-year-old limestone "Venus was dug up](#)

[in France](#). The exceptional find is believed to have been carved sometime during the Paleolithic-era and is notable for the realistic rendering of its female features. Yet another team finally discovered the meaning of a handbook that had mystified researchers for 35 years, as [an ancient Egyptian codex was finally deciphered](#). Turns out, it's full of spells and invocations, and cures for common illnesses. Also, another team discovered and was able to analyze a small amount of perovskite found in a meteorite which has finally allowed the world's [most abundant mineral to be named: Bridgmanite](#)—it's believed to make up 70 percent of the Earth's lower mantle, but couldn't be officially named until it was analyzed firsthand. And [researchers performing an autopsy on a 40,000 year old mammoth discovered blood that brings mammoth cloning closer to reality](#)—they believe there is enough blood to extract a reasonable amount of DNA.

In other interesting news, [a team of engineers made a sound loud enough to bend light on a computer chip](#), allowing for integrating [optical circuits](#) in the same layer of material as acoustic devices—that could mean advances in [communications devices](#) and possibly open the door to quantum applications. Meanwhile, another team of engineers described how they created [a "superomniphobic" texture capable of repelling all liquids](#)—and it doesn't matter what the surface is made of. They believe it could help slow down corrosion in a wide variety of materials. Also interesting, a team of researchers in Australia reported that they are getting closer to showing [how "body recognition" could compare with fingerprint identification](#). They're looking at a wide variety of body measurements that taken together could serve as a means of identifying a unique individual.

And finally, for those people who thought switching from "real" tobacco cigarettes to the new "fake" kind, to save their health, comes news from a team of researchers in Japan who have found that [e-cigarettes contain up to 10 times the carcinogens as tobacco cigarettes](#). It's because of the

mix of materials that makers are putting in them, some of which are essentially poisoning e-smokers.

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