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Want to smell in virtual reality? A Vermont-based startup has the technology

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By Mikaela Lefrak, Vermont Public Radio



OVR Technology co-founder Andrew Wisniewski shows how his company's technology allows users to smell in virtual reality. (Mikaela Lefrak/VPR)

The virtual reality market is expanding rapidly. Put on a VR headset, and you can play a video game, host a work meeting or even do a guided meditation, all while exploring what feels like a three-dimensional virtual space.

Now, thanks to a Burlington, Vermont-based tech startup, you can also smell.

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OVR Technology is one of a handful of companies developing scent technology for virtual reality.

"What we wanted to do was, as accurately as possible, recreate how we experience smell in the real world in the virtual world," said Andrew Wisniewski, OVR's CEO and co-founder.

At the company's headquarters at Hula in Burlington's South End, Wisniewski held his company's signature device in the palm of his hand: a black cartridge that snaps onto a VR headset and fits over the nose. Inside the cartridge are vials of scents manufactured in the OVR lab.

Users testing out the device can try out demos like picking and smelling a virtual rose. When you pull the rose away, the smell instantly disappears instead of lingering like a perfume. That effect is due to the OVR hardware.

At first it feels a bit like a modern day Smell-o-Vision, Hollywood's attempt from the late 1950s and early 1960s to incorporate scent into movies. A machine would pump odors into movie theaters corresponding with the action on screen, like the smell of gun smoke during a shootout.

The Smell-o-Vision technology never worked well — the various smells would mix together, and some parts of the theater would be inundated with scents while other parts would get none at all.

But Hollywood was onto something, according to Judith Amores, a research fellow at Massachusetts General Hospital and Harvard Medical School. Her work is focused on scent and virtual reality.

"People don't really appreciate the sense of smell," she said. "It's actually so important, it's so unexplored, and it's so powerful."



Sarah Socia, OVR Technology's VP of scentware, fills vials of scents. (Mikaela Lefrak/VPR)

Just ask anyone who lost their sense of smell after contracting COVID-19. According to one survey out of Virginia, more than half of respondents said life felt less enjoyable after losing their sense of smell or taste.

Amores says smell also helps us create memories. And for virtual reality to feel like reality, it needs smell.

"The smell of your grandma, or the particular perfume of someone — I think those are very very powerful," Amores said. "It's not the same as seeing the image."

Reproducing real world odors with chemicals in a lab is extremely difficult, but it's that work that Wisniewski loves.

Wisniewski grew up in Hinesburg, Vermont, and started his career as a chef and sommelier, before shifting to the flavor and fragrance industry. He became enamored with the art of identifying scents and rebuilding them in a laboratory.

"It's very interesting to me scientifically but also psychologically, because smell has such a big impact on consumer behavior," he said.

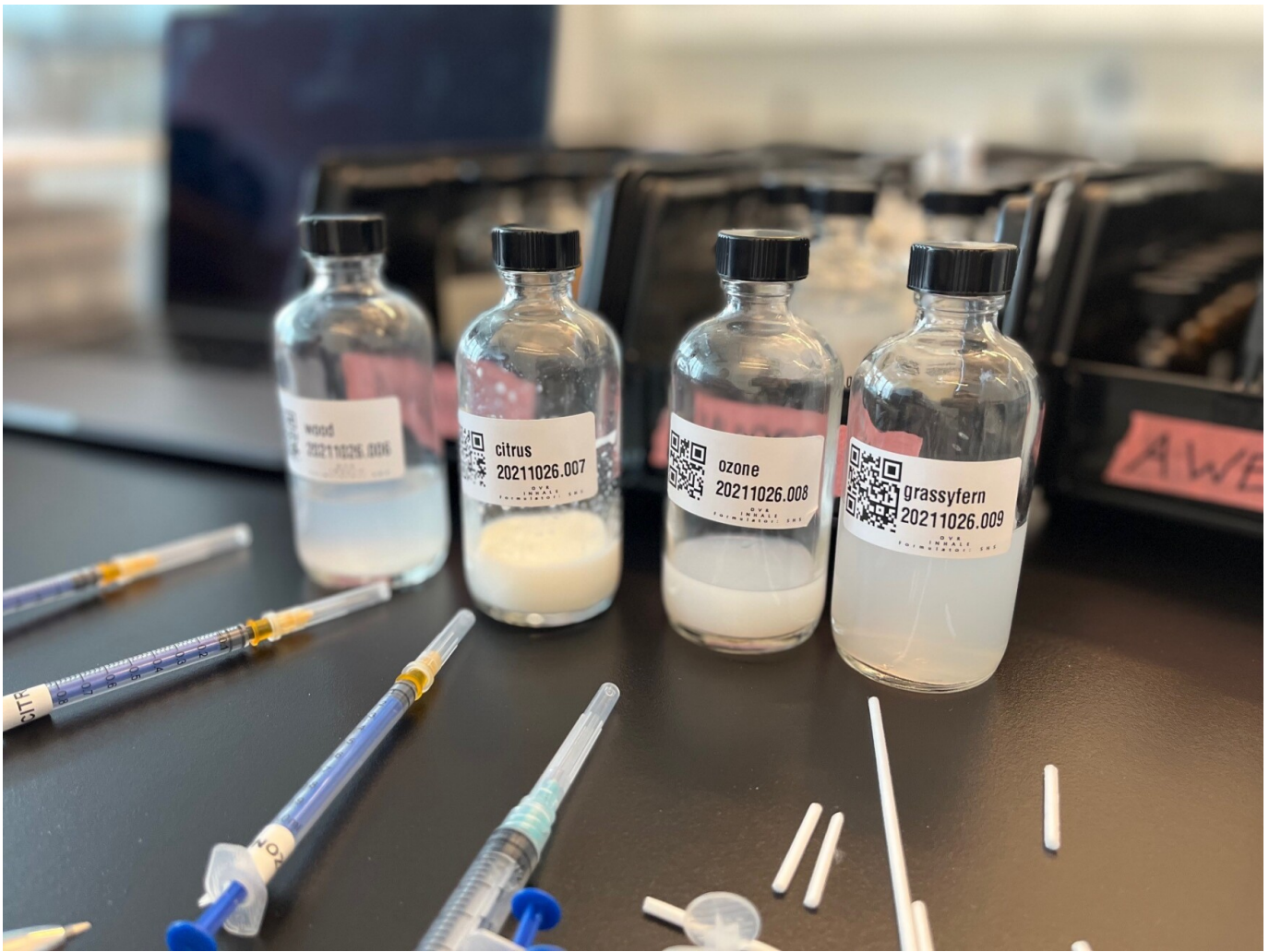
Not all the smells in a virtual reality experience are going to be as pleasant as a rose, said Sarah Socia, OVR's vice president of scentware. On a recent workday in the lab, she filled small vials with clear, pungent liquids and warned visitors not to smell.

She pointed out the different scents she was working with that day: urine, garbage, diesel fuel, gunpowder, blood, dirt and feces.

These malodors can be used in training simulations for soldiers or first responders. For example, a firefighter-in-training might do a training in which he navigates his way through a burning building in virtual reality while smelling "virtual" smoke.

"When it does happen in real life, we have the kind of muscle memory to react appropriately," Wisniewski said of this training model. "We also have that kind of emotional and psychological memory, so we're not overwhelmed by it."

On the other end of the smell spectrum, positive scents can help people find an elusive sense of calm. OVR Technology is working on a program called Inhale, in which users explore a beach or forest in virtual reality while inhaling calming, nature-based scents and listening to a guided meditation.



(Mikaela Lefrak/VPR)

Inhale is currently being used in a handful of detox clinics for people in addiction recovery, including River Rock Treatment Facility in Burlington.

"It's a way to increase mindful activity with a different modality," said Jae Bowman, River Rock's co-founder and director. "The most common response we get is, 'It's fun, it's nice, it's a way to step out of my day-to-day and just be present with that scenario.'"

OVR only contracts directly to businesses like these clinics, not individuals, at least for now. An OVR spokesperson declined to share how much the product costs.

We do know that virtual reality overall is attracting a lot of business interest. According to an industry analysis by PriceWaterhouseCoopers, virtual and augmented reality currently account for more than \$46 billion in the global economy. That's projected to jump to \$1.5 trillion by 2030.

Wisniewski and his team aim to claim a slice of that pie.

"We hope one day when, you know, VR headsets and [augmented reality] glasses are as commonplace as our smartphones, our technology will be integrated in them the same way that audio technology is implemented into all those devices," he said.

To really experience the metaverse, Wisniewski believes, you don't just see it or hear it. You have to smell it, too.

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