

Zapping orange peel oil into new, pleasant aroma compounds

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As oranges are peeled, they spray a tangy, citrus scented oil into the air. The main compound in the fragrant mist is limonene, which can be collected from discarded peels and used in flavorings, perfumes and all-purpose cleaners. Now, researchers reporting in *ACS' Journal of*

Agricultural and Food Chemistry have treated limonene with electricity and ethanol, transforming it into a mixture of pleasant-smelling aroma compounds, some of which haven't been identified before.

Limonene is regularly used in its original form, but it can also be the starting platform for other scents. But synthetic oxidation techniques that can perform this transformation have traditionally required environmentally [harmful substances](#), such as strong chemicals and heavy metals. So, Holger Zorn and colleagues tested an environmentally benign oxidation method, mixing limonene with ethanol and applying an electrical current to the solution.

The process generated an amber-colored liquid with a pleasant odor and 17 different compounds that had fruity, herbal, citrus and resinous notes. According to the researchers, this is the first time that most of these compounds have been described. The simple, sustainable method could create valuable aroma compound mixtures for flavorings or fragrances, but the compounds must be evaluated for safety before use in commercial products, the researchers say.

More information: Florian Birk et al, Generation of Flavor-Active Compounds by Electrochemical Oxidation of (R)-Limonene, *Journal of Agricultural and Food Chemistry* (2022). [DOI: 10.1021/acs.jafc.2c01301](https://doi.org/10.1021/acs.jafc.2c01301)

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