

Artificial nose can distinguish between coffee brands

February 19 2010, by Lin Edwards



(PhysOrg.com) -- A team of chemists led by Ken Suslick from the University of Illinois in Urbana-Champaign, have developed a coffee analyzer that can distinguish between ten well-known commercial brands of coffee and can also make a distinction between coffee beans that have been roasted at different temperatures or lengths of time.

Scientists have been trying to develop an analyzer for coffee for some years, but the task is complicated by the fact that the aroma of roasted coffee beans is derived from over one thousand compounds, many of which change with the temperature and time of roasting. Many of the compounds are also similar to each other, which makes distinguishing between them difficult for methods such as gas chromatography (GC)

and [mass spectrometry](#) (MS), and also for sensors that change chemical properties or colors when exposed to the compounds.

The new analyzer is a variation on the [electronic nose](#), and uses 36 dyes, each of which interacts strongly with a specific compound. The pigments within the dyes include pH indicators, and metalloporphyrins, which are a class of strongly colored pigments to which [chlorophyll](#) and hemoglobin belong. Droplets of the dyes are placed on a [polymer film](#) about 1 cm across and then exposed to the coffee vapors.

The volatile compounds in the coffee aroma produce different colors as they interact with the dyes, and Suslick and his team found that different brands of coffee, and coffee roasted under different conditions produced unique color patterns.

The coffee analyzer may help coffee growers determine cheaply, and almost instantly whether batches of coffee are as good as previous batches, or whether problems such as burnt flavors exist in the batch. Variations on the device could also find uses in a wide range of applications such as detecting contaminants in toothpaste or sniffing out explosives. The report on the analyzer appears in this month's edition of [Analytical Chemistry](#).

More information: Discrimination of Complex Mixtures by a Colorimetric Sensor Array: Coffee Aromas; Benjamin A. Suslick, Liang Feng and Kenneth S. Suslick; Anal. Chem., Article ASAP.

[DOI:10.1021/ac902823w](https://doi.org/10.1021/ac902823w)

© 2010 PhysOrg.com

Citation: Artificial nose can distinguish between coffee brands (2010, February 19) retrieved 10 June 2023 from <https://phys.org/news/2010-02-artificial-nose-distinguish-coffee-brands.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.