Andy's book is now for sale in the U.K. at http://amzn.to/1FWQ8z8.

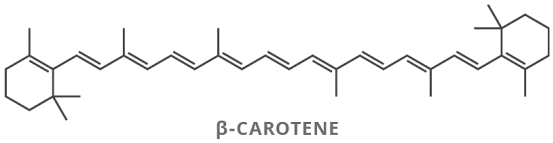
PeriodicGraphics With Compound Interest

A collaboration between C&EN and Andy Brunning, chemistry educator and author of the popular graphics blog Compound Interest. To see more of Brunning's work, go to compoundchem.com.

THE CHEMISTRY OF PUMPKINS

Halloween's approaching. Before you get out the pumpkin-carving kit, take a look at this spooktacular review of the chemicals behind the color, aroma, and taste of this seasonal squash.

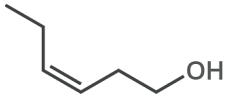
COLORATION



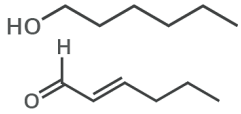
β-CAROTENE

A pumpkin's hue is due to carotenoid compounds such as β-carotene, the same compound that gives carrots their orange color. Other carotenoids include lutein, found in egg yolks, and zeaxanthin, found in corn.

AROMA



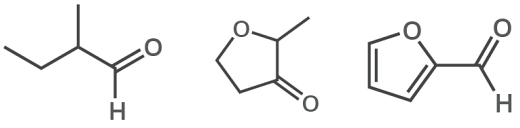
cis-3-HEXEN-1-OL



n-HEXANOL & 2-HEXENAL

When cut, pumpkins emit a vegetal aroma thanks to several compounds. The main aroma contributor is *cis*-3-hexen-1-ol, along with other six-carbon alcohols and aldehydes. Buttery-smelling diacetyl is also present.

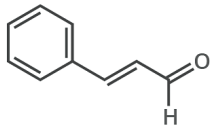
CANNED PUMPKIN



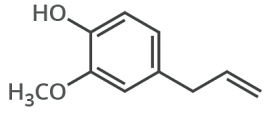
2-METHYLBUTANAL, COFFEE FURANONE & FURFURAL

Canned pumpkin emits almost none of the six-carbon odor compounds given off by a freshly carved pumpkin. Instead, its volatiles include burnt-smelling 2-methylbutanal, coffee furanone, and furfural.

PUMPKIN SPICE



CINNAMALDEHYDE



EUGENOL

Pumpkin spice flavor has little to do with pumpkin and more to do with the spices added, including cinnamon (cinnamaldehyde), nutmeg, and clove (eugenol). Other compounds in the mix add caramelized notes.