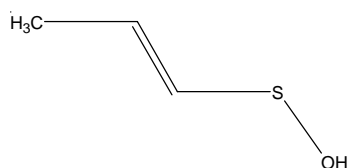


## Detection of Unstable Compound Released by Chopped Chives

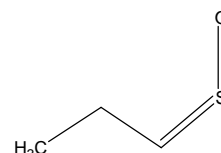
Every cook knows that chopping onions releases chemicals that cause eye irritation. The lachrymator released by chopped onions and related plants is formed by the action of a pair of enzymes on a cysteine derivative to ultimately form propanethial S-oxide ( $C_3H_6SO$ ), the compound that causes eye irritation.

This compound is reactive and unstable and is therefore difficult to analyze by conventional mass

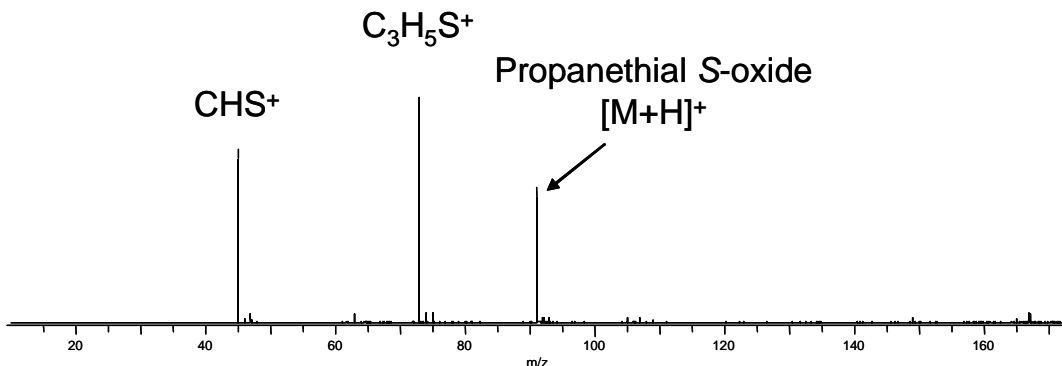
spectrometry techniques. However, DART was easily able to detect propanethial S-oxide when a freshly cut chive bulb was placed in front of the mass spectrometer. The sample was analyzed at atmospheric pressure under ambient conditions and no sample preparation was required, other than cutting into the chive bulb. The compound was detected as  $[M+H]^+$  ( $C_3H_7SO^+$ ,  $m/z$  91.0139).



*Sulfenic acid released by enzymatic reactions when an onion is cut*



*Propanethial S-oxide lachrymator in onion*



*Lachrymator detected from freshly chopped chive bulbs placed in front of the mass spectrometer.*