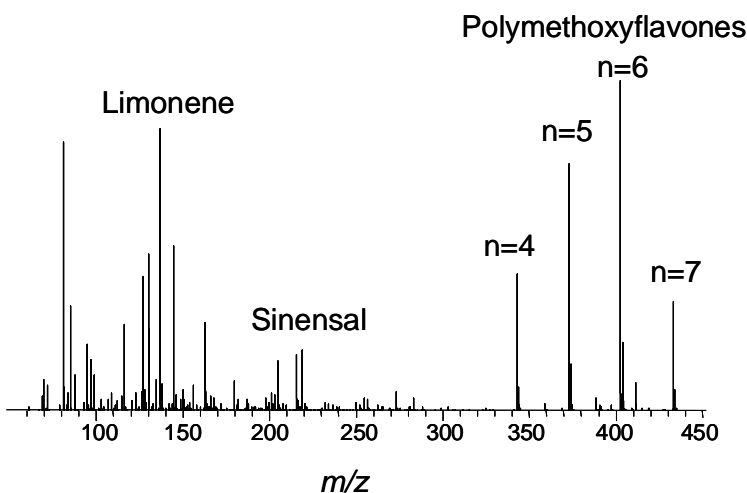


## Rapid Detection of Fungicide in Orange Peel

Thiabendazole is an anthelmintic and a highly persistent systematic benzimidazole fungicide that is widely used for controlling spoilage in citrus fruit. It is considered a General Use Pesticide (GUP) in EPA Toxicity Class III – Slight Toxicity.

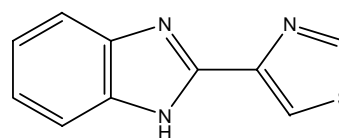
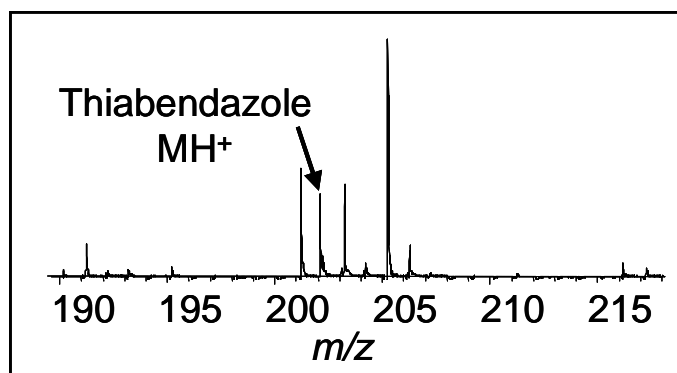
A small piece of orange peel (a few square millimeters in size) from a Florida orange was placed in

the DART sampling region. Compounds present in the peel were detected within seconds. Among these were the familiar orange-oil flavor components such as limonene and sinensal as well as polymethoxylated flavones that are attributed with antioxidant and cholesterol-reducing properties.

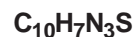


An enlarged view of the region near  $m/z$  202 is shown below. The large peak at  $m/z$  205.1949 has the elemental composition  $C_{15}H_{24}$ , assigned as the  $[M+H]^+$

for farnesene. Residual thiabendazole was detected as  $[M+H]^+$  at  $m/z$  202.0444, which differs by only 0.0005 from the theoretical  $m/z$  of 202.0439.



**Thiabendazole**



Measured: 202.0444 Da

Calculated: 202.0439 Da

Difference: 0.0005 Da

**Conclusion:** DART was used for the rapid detection of trace pesticides on fruit.