Pinic Acid – A Missing Piece in the Puzzle

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**Motivation:**
- Pinic acid is a major product of monoterpene oxidation.[1]
- Highly water soluble – present in cloudwater.[2]
- Lack of systematic investigation.[3]

**Objectives:**
- A mechanistic investigation of its OH oxidation mechanism in the aqueous phase.
- Product identification. pH dependence?

**Approaches:**
- Synthesis of *cis*-pinic acid. [3]
- Batch photooxidation in the lab.
- Offline analysis: HR-ESI-MS (elemental composition, yield).
- Online analysis: Particle-into-liquid sampler- (PILS-) MS.

Preliminary Results

Highlighting a few products:

- MW 186
- MW 156
- MW 188

Multi-generational OH oxidation is occurring:

- MW 172 norpinic acid
- MW 204 1,2,3-methyltricarbalylic acid (MBTCA)?

Fragmentation pattern of norpinic is consistent with a diacid. m/z 203 may be a diacid instead of MBTCA.

MS² for m/z 171

MS² for m/z 203