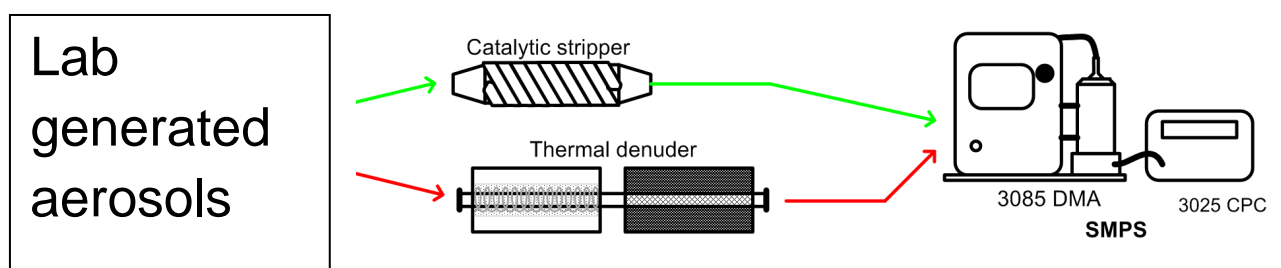


# CS AND TD COMPARISONS – LABORATORY GENERATED AEROSOLS

## APPLICATION NOTE CI-0003

Alternatives to the CS include the thermal denuder (TD), shown below, and heated evaporation tube. Experiments below show comparisons between these two approaches when challenged with aerosols containing solid and semi-volatile particles [1].

Approach: aerosols containing both tetracosane ( $C_{24}H_{50}$ ) and sulfuric acid ( $H_2SO_4$ ) were generated and used to challenge a TD, a CS, and the combination of a TD followed by a CS.



The TD method as evaluated introduced measurement artifacts. Semi-volatile particle artifacts due to nucleation or re-condensation of vapors that are greatly enhanced by low or zero levels of pre-existing solid (elemental carbon) particles. Solid particle artifacts may be due to charring or pyrolysis reactions within semi-volatile particles that appear to be catalyzed by sulfuric acid.

