

Interactive comment on “New insights into atmospherically relevant reaction systems using direct analysis in real time-mass spectrometry (DART-MS)” by Yue Zhao et al.

Anonymous Referee #2

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This is a well written manuscript reporting on the application of DART-MS for in-situ analysis aerosolized particles of C3-C7 dicarboxylic acids reacted with gas-phase amines and laboratory SOA generated by ozonolysis of alpha-cedrene – all are model systems relevant to atmospheric aerosols. The results show that DART-MS has a good potential for molecular-level analysis of aerosol mixtures with enhanced sensitivity to shallow surface (~30 nm) layer of particles. Complemented by more traditional AMS detection of the whole particle volumes, DART-MS can provide unique information on the surface chemistry of particles. The presented results are thoroughly evaluated in a context of available literature reports and are convincing. Overall, this is an accomplished work in all its aspects including scientific impact, original measurements,

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methodology development, and presentation quality. I recommend this paper for publication. Below, I list a few minor notes to consider in the revised manuscript.

I think that quantitative estimate of the surface layer (~ 30 nm) probed by DART is a very important result that needs to be included in the abstract. Line 24: 'particles' after (SOA) can be removed Line 33: 'However' is not needed. Eq (1): it needs to be noted that eq 1 assumes the same effective ionization efficiency for gas-phase and particle phase amines that likely won't be always correct. Line 205, eq 2, and then throughout the text: it is more common to use 'normalized surface area' rather than 'surface area normalized'. Line 293: consider change of 'explanation is the relative...' to something like 'a possible explanation can be suggested based on differences in the relative saturation vapor pressures'

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2016-357, 2016.

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