

Interactive comment on “Optical properties and composition of viscous organic particles found in the Southern Great Plains” by Matthew Fraund et al.

Anonymous Referee #1

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The manuscript “Optical properties and composition of viscous organic particles found in the Southern Great Plains” presents the observation results of HVOP during April and May 2016. The works focused to discriminate between ASOP and TB in the HVOP. The studies provide different methods to characterize the ASOP. However, my primary concern is that the authors did not make it clear the contribution of ASOP to the BrC and how important the ASOP is in the atmosphere. Major comments 1. The experimental section “a portion of one SOM sample was used to generate particles by bubbling N₂ gas through the liquid using a fritted glass bubbler and then collected on substrates to mimic the hypothesized mechanism of ASOP formation.” The authors should give the detail information about the bubbling simulation processes and parameters. 2.

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“where ASOP comprised up to 80% of the particles by number.” The impactor can only provide the mass concentration. But the ASOP fraction was obtained based on particle number. Why? What is used to determine the ASOP number? 3. Precipitation results in the emissions of ASOP, but the AAE did not present an obvious increase during the rain events. Why? 4. In Fig. 1, the AAE did not correlate with the particle number. Why? 5. “ASOP may make up a small fraction of the HVOP seen during this sampling period.” Indicating that most of the HVOP comes from the anthropogenic sources, such as coal-fired power plant, oil refinery and natural gas power plants. My concern is that why we should focus on the ASOP, as it may have few impacts on aerosol radiative forcing and climate effects. 6. “Our results support the bubble bursting mechanism of particle generation during rainfall resulting in the ejection of soil organics into the atmosphere.” But the paper did not discuss how the ASOP ejected from soil to atmosphere during rainfall. The authors should include this parts in the paper.

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C2