

## ***Interactive comment on “Broadband measurements of aerosol extinction in the ultraviolet spectral region” by R. A. Washenfelder et al.***

**Anonymous Referee #2**

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This paper presents methods for determining the refractive index of particles based on measurements of aerosol extinction using a cavity ring-down device and light sources spanning 360 to 420nm, (a rather small wavelength range). The main approach requires a method to generate monodisperse particles, which is done with a custom made DMA. The authors present the instrument as a laboratory device that has potential for field deployment. The method is tested on a number of aerosols from purely scattering to absorbing and the results agree with published particle refractive indices. The paper is well written and the authors have gone through careful consideration of many aspects of the method. Two reviews have already focused on issues with generating purely monodisperse particles, which is critical to the method, specifically dealing

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with how to handle multiple charging effects on the sizes of particles generated with a DMA.

My concerns with the method also deal with the method of generating monodisperse particles, especially if the instrument is used for ambient studies. I assume ambient aerosols would be dried so that the complex refractive index is not a function of particle water content. This raises the issue of non-spherical particle effects on sizing and optics, the authors discuss this briefly and suggest using a device that selects particles by density – more details would be helpful since this could be a critical issue. Secondly, the authors use a homemade DMA, I assume so that they can extend the size range to 800nm (long column). However, for ambient particles, extinction for particles larger than this size may be important and would not be considered by this method. How could the authors extend the method to larger sizes? Or maybe the authors feel measurements up to only 800 nm is sufficient? Is there any evidence for the latter?

Overall, this work is a significant contribution to an important aerosol problem; sensitive measurements of the complex refractive index of real un-altered ambient particles. The paper deserves to be published with very minor changes needed.

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