Atmos. Meas. Tech. Discuss., 2, C297–C298, 2009
www.atmos-meas-tech-discuss.net/2/C297/2009/

Atmospheric Measurement Techniques Discussions

Interactive comment on "Design and performance of an automatic regenerating adsorption aerosol dryer for continuous operation at monitoring sites" *by* T. M. Tuch et al.

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Received and published: 15 June 2009

The authors have designed, constructed, and tested an automatic regenerating aerosol dryer system for continuous monitoring measurements. The system allows to control the aerosol sample humidity of a relatively high flow rate maintaining high transmission efficiency in the sub-micron particle size range. The technical sections are complete and clear, except the description of the column switch (section 3, p1147) where the description of the valves is sometime confusing (magnetic feed valves, magnetic exhaust valves and ball valves..). May be it would be better to give a name to each of the valves of the schematic view in Fig.2 (e.g. V1 to V8). The manuscript was easy to read,

enjoyable, and basically fine. However I have just a few comments and questions:

- In the introduction you describe several methods to condition the aerosol to a required relative humidity. What about GORE-TEX tubing of large inner diameter to dry the sample flow? - Page 1146, Section 2: It would be useful to mention the "particle residence time" within the dryer column. Similarly you could specify some details about the mesh used in the columns. - Page 1148,L20: How is calculated the transmission efficiency shown in Fig.5? - Fig.5: Why is the transmission efficiency greater than the unity for particle diameters larger than 150 nm ? In page 1147 ,L9 you say that you need 14.4 m3/h of dry air for the regeneration of the silica gel. During time, silica gel grains will breaks down "producing particles" that could pass through the grid. Does this imply a "contamination" of the aerosol sample flow through the mesh while the columns switches? Did you never check "leaks" from the inner mesh? (e.g. using a total filter at the dryer inlet and measuring the total counts during the switching phase) - Page 1150,L6: please replace "dyer" - Page 1150,L12: Did you replace the Silica Gel after 6 month?

I thank the authors for the opportunity to review the manuscript. It was an excellent use of my time.

Interactive comment on Atmos. Meas. Tech. Discuss., 2, 1143, 2009.