

Influence of Thermodenuder Dimension on Nanoparticle Measurement

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The use of thermodenuder is proposed to suppress the nanoparticle measurement fluctuations caused by the volatile components. The problems encountered during the use of thermodenuder for nanoparticle measurement and their respective solutions are suggested. The behavior of nanoparticles in the thermodenuder itself is not clearly understood but the thermodenuder influences both the volatile and solid particles. As a first report, only the effect of thermodenuder dimension on solid nanoparticle measurements is presented. It is concluded that the TD influences the nanoparticles i.e. loss of particles occurs even the sample gas contains no volatile fractions. A sharp temperature gradient between the low temperature wall of the absorption part of TD and hot sample gas causes particle losses due to thermophoresis effect. Especially the smaller particles are affected significantly. To solve above problems related with the measurement of nanoparticle with TD some cautions have been suggested.