Chayaporn Phuetfoo 2014: Effects of Nanosized Particulate Matters on Hygroscopic Properties. Master of Science (Environmental Science), Major Field: Environmental Science, Department of Environmental Science. Thesis Advisor: Assistant Professor Surat Bualert, Ph.D. 104 pages.

This research is to study the effects of nanosized particulate matters on hygroscopic properties of potential cloud condensation nuclei (CCN). The hygroscopic properties were measured using a Hygroscopic Tandem Differential Mobility Analyzer (H-TDMA) for dry particles with diameters of 30-250 nm in urban area (Bangkok) and rural area (Phetchaburi province). The hygroscopic growth factor was considered as two hygroscopic groups, less hygroscopic group and more hygroscopic group. In urban area, the averaged number fractions of the less hygroscopic group were in range of 0.31-0.59 and in range of 0.41–0.69 for the more hygroscopic group. The less hygroscopic particles had average growth factors of 1.05, 1.05, 1.05,1.04, 1.04 and 1.04 for particle diameters of 30,50, 100,150, 200 and 250 nm, respectively. For the more hygroscopic particles (at the same sizes as less hygroscopic group), the averaged hygroscopic growth was 1.35, 1.26, 1.21, 1.22, 1.24 and 1.30. In rural area, the averaged number fractions of the less hygroscopic group were in the range of 0.39-0.60 and in the range of 0.40-0.61 for more hygroscopic group. The less hygroscopic particles had average growth factors of 1.09, 1.07, 1.07, 1.06, 1.06 and 1.06 for particle diameters of 30, 50, 100,150, 200 and 250 nm, respectively. For the more hygroscopic particles (at the same sizes as less hygroscopic group), the averaged hygroscopic growth was 1.42, 1.27, 1.24, 1.25, 1.26 and 1.38. Hygroscopic growth factor of nanosized particulate matters depending on the chemical composition of the particulate matter. In this study, the concentration of element carbon in the two areas were significant difference, therefore hygroscopic growth factor in each areas are different.

Student's signature	Thesis Advisor's signature	___ / ___ / ___