Dynamic Light Scattering Study of Carbon Nanoparticles Aggregating in Aerosol Phase RAJAN DHAUBHADEL, AMITABHA CHAKRABARTI, CHRISTOPHER M. SORENSEN, Kansas State University — Intensity correlation function was measured using ALV5000 correlator for the aerosol system created inside an optical chamber by exploding a mixture of a hydrocarbon (Acetylene) and oxygen. The observations were taken at two $q$ (scattering wave vector) values $8.81 \, \mu m^{-1}$ and $24.20 \, \mu m^{-1}$, which for $\lambda = 488 nm$ correspond to scattering angles $40^\circ$ and $140^\circ$ respectively. For a system with medium volume fractions ($\sim 8 \times 10^{-5}$) or higher it was observed that the decay in intensity correlation was exponential initially for up to about 1 minute and then transited to stretched exponential with stretched exponent of about 0.45 for $q = 24.20 \, \mu m^{-1}$ and 0.65 for $q = 8.81 \, \mu m^{-1}$. The value of intensity correlation function at small time is also found to decrease a little bit with time at both $q$. This indicates of the development of static scatterer in the scattering volume with time (gelling of the cluster). This also introduced non-ergodicity in the system.