

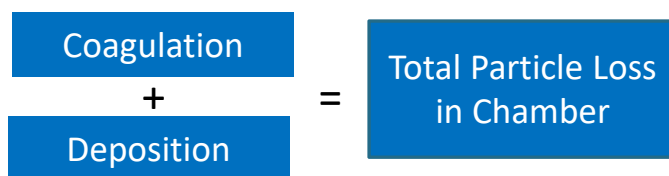
# PARTICLE DEPOSITION IN AEROSOL CHAMBER

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**Objective:** Develop a method to calculate deposition constant value  $k$  for UND aerosol bag using ammonium sulfate particles at low concentration.



Inside view of the aerosol chamber with fully inflated bag.



At low particle concentrations when coagulation is ignored, the deposition rate and thereby constant for the aerosol bag can be solved using the values for the total particle loss in chamber.

**Research Project:** Injecting ammonium sulfate into the aerosol chamber in low concentrations almost completely eliminates coagulation, leaving deposition the only particle loss factor. After modifying the deposition equation to solve for deposition constant  $k$ , the  $k$  results for each experiment were plotted against particle diameter. The average  $k$  value for these experiments vs. particle size are shown in the figure below. Comparing the trend of these experiments to other work indicates relative unity. The “bump” seen in the figure below, suggesting charged particle interaction, is also found in other experimental work. As expected, the  $k$  constant is a function of particle size and the formulas for the size dependency are listed below, broken into the two observed trends. These trends can be applied to future experiments to reduce deposition error.

