

The dusty plasma consists of negatively charged micro-meter sized dust particles suspended in low pressure gaseous discharges. The strong Coulomb interaction due to the large negative charges on the dust particle (about 10⁴ electron/dust) can turn the system into an ordered solid state or slightly disorder liquid state. The sub-mm inter-dust scale and a few to a few tens of second structural relaxation time enable the direct visualization of micro-dynamics at the kinetic level through optically tracking particle trajectories. In this talk, I will introduce the basic principle of the charging and formation of dusty plasma system, and the experimental works about the micro-structural and motion in the solid, liquid, dust acoustic wave, and bubbles in the dusty plasma.