R009-P19
ポスター 3：11/26　PM2/PM3（14:50-18:25）

金星雲における硫酸液滴の共凝結における分岐と力学的安定性に関する研究

#安藤 紘基 [1)], 中野 諭 [2)], 島 伸一郎 [2)], 髙木 征弘 [1)], 佐川 英夫 [1)]
([1] 京都産業大学, [2] 兵庫県立大学

Bifurcation and stability of the co-condensation dynamics of H2SO4-H2O droplets in Venusian clouds

#Hiroki Ando[1)], Satoru Nakano[2)], Shin-ichiro Shima[2)], Masahiro Takagi[1)], Hideo Sagawa[1)]
([1]Kyoto Sangyo University, [2]University of Hyogo

The clouds covering Venus globally, that are primarily composed of H2SO4-H2O droplets, strongly influence the thermal structure and dynamics of the atmosphere. However, the mechanism governing their growth and long-term maintenance remains poorly understood. In this study, the bifurcation structure of the droplets' growth dynamics through the co-condensation of H2O and H2SO4 is investigated by constructing a box model under the assumption of a monodisperse droplet population. Our analysis reveals that the phase portrait depends on the saturation ratios of the H2O and H2SO4 gases and that the mass of H2O in the droplet varies much more rapidly than that of H2SO4 under conditions near the Venusian cloud base. The condition for the stable existence of Venusian cloud droplets is also investigated in terms of the saddle-node bifurcation. Based on these findings, we simulate the droplets' growth under the thermodynamic conditions near the Venusian cloud base and find that the small cloud droplets, such as Mode 1, may rapidly grow into larger ones, such as Modes 2 or 3, depending on the droplet number density.