

学位論文要約

**The biogeochemical study of urban and marine aerosol based on chemical speciation**

(化学種解析に基づく都市・海洋エアロゾルに関する生物地球化学的研究)

坂田 昂平

Department of Earth and Planetary Systems Science,  
Graduate School of Science,  
Hiroshima University

**Content of the thesis**

**Abstract**

**Chapter 1 General Introduction**

**Chapter 2 Major Ions and Trace Metals Concentration Monitoring in Urban Size-Fractionated Aerosol Particles**

**Chapter 3 Boron Isotope Ratio in Size-Fractionate Aerosol Particles: Evaluation of Availability of Atmospheric Circulation Tracer**

**Chapter 4 Lead (Pb) Species and Their Chemical Reactions in Coarse and Fine Aerosol Particles: Implications of the Environmental Effect of the Atmospheric Pb**

**Chapter 5 Estimation of Trace Element (Fe, Ni, Cu, Zn, and Pb) Species in Droplet Mode Aerosol by Aquatic Equilibrium Model: Calibration of Model Result by XAFS Spectroscopy**

**Chapter 6 Elemental Distributions of Marine Aerosol Particles above the Pacific Ocean: Development of Ultra Clean Size-fractionated Aerosol Sampling and Its Application for Atmospheric Chemistry in Marine Atmosphere**

**Chapter 7 Carbon Speciation in Single Submicron Sea Spray Aerosol above The Antarctic and the Equatorial Pacific Oceans**

**Chapter 8 Reactive Chlorine Emission from Sea Spray Aerosol to Marine Atmosphere: Importance of Chemical Reaction of Hydroxyl Radical**

**Chapter 9 Detection of Reduced Sulfur from Marine Aerosols: New Pathway of Atmospheric Sulfur in Marine Atmosphere**

**Chapter 10 General Conclusions**

**References**

**Acknowledgement**