## 学位論文要約

## Experimental simulations of reactions by meteorite marine impact: Implications for chemical evolutions of amino acids present in early oceans and the origin of life on the Earth

(隕石海洋衝突による化学反応の実験的考察: 初期地球におけるアミノ酸の化学進化と生命の起源への応用)

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## Content of the thesis

Preface

Abstract

**Chapter 1. General Introduction** 

- Chapter 2. Experimental methods for simulations of meteorite marine impacts
- Chapter 3. Survivability and chemical reactions of glycine and alanine in early oceans: effects of meteorite impacts
- Chapter 4. Morphological changes of olivine grains and formation of carbon-rich substances from amino acids by impact process
- Chapter 5. Hydrogen cyanide (HCN) formation and its effects on the chemical evolution

## **Chapter 6. Conclusions**

References

Acknowledgements