

## 南極域の大気バイオエアロゾル直接採集と生物分析

小林 史尚<sup>1</sup>、牧 輝弥<sup>1</sup>、柿川 真紀子<sup>2</sup>、山田 丸<sup>3</sup>、松木 篤<sup>2</sup>、長沼 毅<sup>4</sup>、岩坂 泰信<sup>5</sup>

<sup>1</sup> 金沢大学 理工研究域

<sup>2</sup> 金沢大学 環日本海域環境研究センター、<sup>3</sup> 労働安全衛生総合研究所、<sup>4</sup> 広島大学 生物圏科学研究科、

<sup>5</sup> 滋賀県立大学

### Direct sampling and bioanalysis of atmospheric bioaerosol on the Antarctic

Fumihisa Kobayashi<sup>1</sup>, Teruya Maki<sup>1</sup>, Makiko Kakikawa<sup>2</sup>, Maromu Yamada<sup>3</sup>, Atsushi Matsuki<sup>2</sup>,  
Takeshi Naganuma<sup>4</sup>, Yasunobu Iwasaka<sup>5</sup>

<sup>1</sup>College of Science and Engineering, Kanazawa University

<sup>2</sup>Institute of Nature and Environmental Technology, Kanazawa University, <sup>3</sup>National Institute of Occupational Safety and Health, <sup>4</sup>Graduate School of Biosphere Science, Hiroshima University, <sup>5</sup>University of Shiga Prefecture

In the Antarctic during the 54th Japanese Antarctic Research Expedition (2012-2013), the bioaerosols near to the ground and sea surface were sampled by the novel bioaerosol sampling apparatus on the naval ice-breaker, Shirase, in the Antarctic Ocean and by the bioaerosol sampler at the Yukidori Valley (Fig.1), the Langhovde Glacier (Fig.2), and the Hukuro Cove. The atmospheric bioaerosol was sampled at Syowa Station using tethered balloon, directly. The bioanalysis of a part of samples was starting. We experienced the direct sampling and bio-analysis of bioaerosols in yellow dust (KOSA) using the bioaerosol sampler which was developed on our own terms, a tethered balloon, and an airplane over Japan and China (Kobayashi *et al.*, 2008). More than sixty strains were isolated as atmospheric bioaerosol over Dunhuang City in China and Suzu City in Japan using separated culture method and metagenomic method. The study of atmospheric bioaerosol over the Antarctic will be focused on because it is attracting attention to find the microorganism in the Antarctic ice cores, investigate the long-range transport of atmospheric bioaerosol, and be starting the worldwide bioaerosol observations. To apply our previous methods in the study on KOSA bioaerosol, the direct sampling and bio-analysis of atmospheric bioaerosol over the Antarctic will be tried. The results and finding of atmospheric bioaerosol over the Antarctic will be establish the strong and important impacts to not only biogeography, ecology, history of the Earth, theory of evolution, influence of health, ice-forming nucleus, and global long-range transports of atmospheric bioaerosols, but also investigation on ecosystem in the sky.



Figure 1. The sampling of bioaerosol at the Yukidori Valley.



Figure 2. The sampling of bioaerosol at the Langhovde Glacier.

### References

Kobayashi, F., M. Kakikawa, et al., Study on atmospheric diffusion of bioaerosols in a KOSA source region, *Eurozoru Kenkyu*, 22, 218-227, 2007.