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[JJ] Evening Poster | B (Biogeosciences) | B-BG Biogeosciences & Geosphere-Biosphere Interactions

## [B-BG02] Interrelation between Life, Water, Mineral, and Atmosphere

convener: Ken Takai (Extremobiosphere Research Center, Japan Agency for Marine-Earth Science & Technology), Kentaro Nakamura (Department of Systems Innovation, School of Engineering, University of Tokyo), Yuichiro Ueno (東京工業大学大学院地球惑星科学専攻, 共同), Yohey Suzuki (Graduate School of Science, The University of Tokyo)

Mon. May 21, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

Life on Earth is based on a diversity of physical and chemical dynamics and processes throughout the history. Interaction between life, water, mineral (rock) and atmosphere is a key to understand co-evolution of Life and Earth. It is a brief since the pioneers proposed this session almost 20 years ago. Current JpGU meeting is filled with international- and interdisciplinary-joint sessions with similar aims to this session in responding to surrounding situations of JpGU and earth science field in Japan. Conveners believe that this session has provided an excellent opportunity to discuss such interdisciplinary research results and directions for about 20 years but are also afraid if this session may complete the initial goal. It is a matter for JpGU members to decide. This is a final call whether this session will continue in future. If you need this session, you will submit abstract of your research to this session for oral presentation with your intension. If we have less than 12 abstracts for oral presentation, we will cease this session in 2018. Join to this session!

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## [BBG02-P12] Polymerization of metal oxide by silica-polymerizing enzyme

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Silicatein is an enzyme which was found in a glass skeleton of marine sponges and catalyzes the polymerization of silica under mild condition. Filament composed of silicatein isoforms, silicatein-alpha, silicatein-beta and silintaphin, can catalyze the polymerization of some kinds of metal oxide such as silica and titania. Silicatein-alpha, and silicatein-beta are aggregative proteins, which would cause a difficulty in engineering application of silicatein. We prepared silicatein-alpha and silicatein-beta fused with soluble protein to improve the solubility of these enzymes. These fusion proteins can be expressed in *E. coli* and are found to be stably soluble after refolding. The formation of silicatein filament can be controlled and the polymerization of silica and titania has been successfully achieved.