Letter from the editor

The papers published in *Synthesiology* describe new synthesis methods for products and services that are put to good use in society by integrating individual elements of technologies and knowledge. Perhaps because I have a mind structure of a person from the science and engineering field, I tend to categorize papers under “experiment” that presents specific examples of synthesis, and “theory” that discusses and systematizes synthesis methods. Of the five papers published in this issue, “Practical use of an advanced sewage sludge incinerator, ‘turbocharged fluidized bed incinerator’” by Suzuki et al. describes the demonstration of a new incineration system that was developed to optimize the urban sludge treatment to save energy and prevent global warming. It presents a case study of introducing the new system to the local governments, and in this case, the focus is on “experiment.” Of course, the experiment conducted here is a field trial involving a local government. Similarly, “Social system for production and utilization of thermophysical property data” by Baba et al. is also a case of a field trial based on a typical synthetic methodology for metrology standards. On the other hand, “Towards large-capacity, energy-efficient, and sustainable communication networks” by Ishii et al. attempts to satisfy future demands for information communication by integrating elemental technologies including for a new high-speed optical switch, a sub-wavelength switch, and a combination array theory. The communication system for the entire country is optimized by projecting predicted types of demands. I see glimpses of the attempt to systematize the combination array and demand categorization in this framework, and this seems to provide a “theory.” In the paper “Open foundry to spur open-innovation” by Akinaga, methods for optimizing new values such as sustainable interdisciplinary integration and human resource mobility is presented through a field trial of open management of a foundry facility. “A novel material design method for on-demand material development” by Inada et al. describes a case study of a system to support material design using the database for synthesizing semiconductor materials from basic materials, and that itself is a discussion of a synthesis method in a microscopic sense. Moreover, the paper addresses the possibility of optimizing the value of risk supply reduction.

In discussing the synthesis method “theoretically,” it is important to set an evaluation index that may serve as a target of optimization. However, other than the indices for pressing issues such as energy savings, environmental pollution countermeasures, and achievement of high speed, synthesiology study must engage in activities to introduce the systems and products obtained from synthesis into society, and to discern new evaluation indices from the claims that arise as reactions of their customers to such introductions. In this meaning, I think there is increasing significance for accumulating results of field trials that are treasure troves of data for synthesiology. Therefore, it is important to clearly explain to the customers the significance of the trials when debuting a “product and service” to society as a fruit of technological development.

(Mitsuru Tanaka, Executive Editor)