

## Readers' Forum

Dear Editor

Please accept my sincere thanks for providing me issues 1 and 2 of *Synthesiology*. My reaction, I'm really impressed. This is a great undertaking and I wish you success in promoting the journal.

I read President Yoshikawa's introduction to the journal. Hopefully you will accomplish what he outlines and all the efforts in managing technology have not really achieved. The research you refer to as Type 2 Basic Research is certainly needed and your description defines the approach very clearly:

“A form of research that integrates the knowledge of different disciplines or creates new knowledge when necessary, and transforms a concept into artifacts (product or service) that can be recognized by society.”

In issue 2 your interview with MIT Professor Lester was most interesting. Excellent questions and excellent thoughts! This is an excellent opportunity to link academia and industry. It is an opportunity to promote integration of disciplines. It should be an opportunity to return to broad-based engineering and technology and management education in academia.

Perhaps we have become too specialized even within the disciplines. I look back at the electrical and electronic engineering curriculum in the US where it has become very specialized. In some cases we graduate students in electrical engineering without even knowledge of how an electric motor functions. They have no significant understanding of mechanics, dynamics, fluid flow, thermo, heat transfer, and other basic studies in engineering.

The articles in these two issues provide valuable material to begin the discussion about integration.

Well I wish you and your colleague's success in promoting integration of knowledge from different disciplines. Will *Synthesiology* be available in the US?

Best regards,

Gus Gaynor

Gerard H. (Gus) Gaynor, IEEE Life Fellow  
President, Technology Management Council

## Letter from the editor

It is our great pleasure to hand you *Synthesiology-English edition* Volume 1, Number 4. It contains papers from diverse fields. I thank all of the people who were involved in creating this issue.

Of particular interest to us is the relationship of *Synthesiology* and the studies by Dr. Osamu Shimomura, the Nobel Laureate in Chemistry in 2008. As you may know, Dr. Shimomura clarified the luminescence in *Aequorea Victoria* and discovered the green fluorescent protein (GFP). Dr. Yoshihiro Ohmiya, one of the contributors of the papers in this issue, wrote in the postscript that Dr. Shimomura's research is a typical *Full Research* that was put into practice through *Type 2 Basic Research* and *Product Realization Research*. Ohmiya *et al.* have developed interest in the luminescence mechanism of firefly, and in the process of clarifying this mechanism, have realized the technology for detecting multiple gene expression using luminescent protein (luciferase). This is an excellent example where the practical use has progressed from the basic research of bioluminescence mechanism that was the main theme of the present Nobel Prize. It can be called a new *Type 2 Basic Research*—a synthetic research.

Dr. Hideyuki Nakajima contributed an article on the methodology of the synthetic research and discipline system. In this article, a very interesting point is raised about language and thought, and he discusses the importance of meaning of words in the synthetic method. Particularly, I find the following points very unique: “English has the perspective of God; Japanese has the perspective of an insect” and “If thought is determined by language, I believe the Japanese are an appropriate ethnic group to introduce a study of synthesis (*Synthesiology*) to the world.”

In relation to Dr. Nakajima's discussion, I shall mention two points about “words” used in the papers in *Synthesiology*. First point is the “term.” Different technical terms are used in different research and technology fields. The terms unique to a certain discipline are the proof of accumulation and

systemization of knowledge in that particular discipline, and there is significance in the fact that the terminologies are different from those of other fields.

On the other hand, in the papers of *Synthesiology*, the research is described as a synthetic method of *Type 2 Basic Research* that transcends the methodologies of individual disciplines. Therefore, appearance of new terms that appropriately describe this methodology is necessary. Perhaps it may take some time, but I expect terms unique to synthetic method will gradually take form. It also means the concept of synthetic method will gradually become clear as the terms develop.

The second point about words is the “language.” In publishing *Synthesiology*, there was a heated debate on whether to use Japanese or English as a language of the journal. In one way of thoughts, the papers should be published in English to be read widely and internationally. In another way, to write papers on *Type 2 Basic Researches* that have never been done before, it is important for Japanese researchers to describe them in Japanese, and the content should first be read in Japanese language by Japanese researchers and engineers.

The Editorial Board decided to emphasize the latter viewpoint, and the journal will be published in Japanese (papers submitted in English will be published in English). On the other hand, we also considered the former viewpoint and decided to publish *Synthesiology – English edition*. Although the publication of the English editions will be a few months behind the Japanese editions, I hope they will be read widely as much as the Japanese edition.

We will be delighted to receive active submissions from overseas researchers and engineers. If you have an opportunity, please, spread the word of *Synthesiology* to researchers and engineers.

Senior Executive Editor  
Naoto Kobayashi

### Synthesiology - English edition Vol. 1 No.4, March 2009

Edited by *Synthesiology* Editorial Board

Published by National Institute of Advanced Industrial Science and Technology (AIST)

#### *Synthesiology* Editorial Board

Editor in Chief: A.Ono

Senior Executive Editor: N.Kobayashi and A.Yabe

Executive Editors: M.Akamatsu, K.Naito, H.Taya

Editors: A.Kageyama, K.Ohmaki, K.Igarashi, E.Tsukuda, M.Tanaka, H.Kuriyama,  
Y.Oowadano, T.Shimizu, H.Tateishi, M.Mochimaru, N.Murayama, S.Togashi,  
K.Mizuno, H.Ichijo, A.Etori, H.Nakashima, K.Ueba, P. Fons

Publishing Secretariat: Publication Office, Public Relations Department, AIST

Contact: *Synthesiology* Editorial Board

c/o Publication Office, Public Relations Department, AIST

Tsukuba Central 2, 1-1-1 Umezono, Tsukuba Ibaraki 305-8568, Japan

Tel: +81-29-862-6217 Fax: +81-29-862-6212

E-mail: [synthesiology@m.aist.go.jp](mailto:synthesiology@m.aist.go.jp)

URL: <http://www.aist.go.jp/synthesiology>

\*Reproduction in whole or in part without written permission is prohibited.