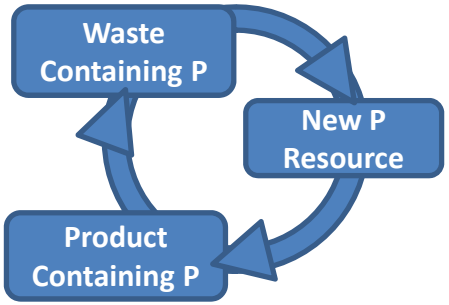
Faculty of Engineering
Tokushima University

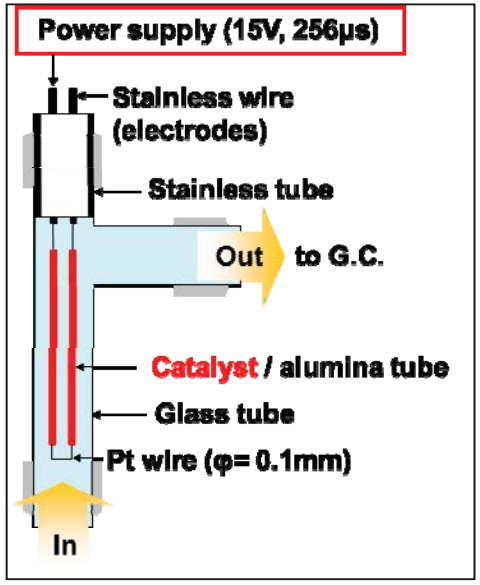
Development of Phosphorus Resource and Catalyst Process Based on Chemical Engineering

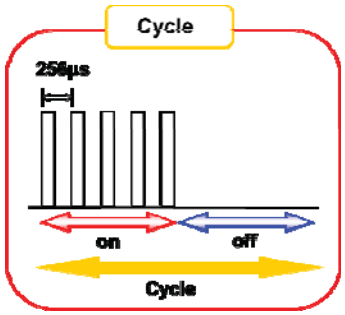
Professor Shigeru Sugiyama



Resource Circulation Map for Phosphorus

(a) Circulation of phosphorus resource





(b) Microreactor for catalytic gas-phase reaction and concept of heater output.

Off: Adsorption.
On: Reaction and desorption.

Content:

Phosphorus is an essential element for plant growth and has no substitute in food production. In the chemical industry, it is used in various advanced materials. Phosphate rock as a raw material of phosphorus is a finite, non-renewable. Therefore, the development of new raw materials containing phosphorus is an urgent issue in Japan. In our group, search of new resource containing phosphorus together with the development of the easy and economical recovery method of phosphorus from the resource is in progress.

As another topics in our group, the possibility of the combination of solid catalyst, reactor and reaction field is examined. For example, the combination of microreactor for gas-phase reaction and calcium hydroxyapatite catalyst resulted in the greatest selectivity, never reported, to the desired product in the oxidative dehydrogenation of propane to propylene. Not only catalyst improvements but also the development of the reactor and reaction field are our main target for the development of catalyst process.

Keywords : phosphorus resource,
solid catalysts, reaction field

E-mail: sugiyama@chem.tokushima-u.ac.jp
Tel. +81-88-656-7432
Fax: +81-88-656-7432
HP : http://www.chem.tokushima-u.ac.jp/C3/