D-FP05 Process Control and Automation 1

13:00-15:00 **Chair : Kim Tae Won (Myongji Univ.)**
Room : 4134 **Co-Chair : Lee Kwangsoon (Sogang Univ.)**

13:00 – 13:20 **D-FP05-1**

Comparison of Titration Curve Estimation Methods for pH Neutralization Processes

Park Ho Cheol and Lee Jietae
(Kyungpook National Univ.)

Control of pH neutralization process plays a very important role in some chemical process. Because of their high nonlinearity, frequent disturbance, and time-varying characteristics, it is difficult to control and estimate pH processes. For the adaptive control of pH processes, a lot of researchers have made an efforts in the modeling and control of pH processes. It is very difficult to obtain information of influent stream such as concentrations and dissociation constants and the titration curve equation is very complex. Therefore, several simple models, which have small number of unknown parameters and estimate the titration curve, have been available, These models were considered here and were transformed into forms that can applied the linear least square method.

13:20 – 13:40 **D-FP05-2**

A Remote Monitoring and Control System for Waste Treatment Facility via Public Communication Network.

Jung Jae Hak and Choi Jin-Young
(Yeungnam Univ.)

The research for development of remote monitoring and control systems composed three stages of research categories. At the first stage, we decided the suitable instrumentation devices for interface between H/W systems and waste water treatment facility. And at the second stage, we developed the software package for remote monitoring and data transmission system including data receipt system via wired telephone line. At the final stage we developed local control system for auto-process control of waste water treatment facilities. For the first stage of research we developed the a drawing of design the instrumentation and selected optimal sensors or monitoring basic important data. After the first stage research we developed the software package with Graphic User Interface(GUI)...

13:40 – 14:00 **D-FP05-3**

System Identification of the Hammerstein Processes for Automatic Tuning of PID Controller Using Relay Feedback

Koo Doe Gyoon, Youn Jung Hoon, Lee Jietae(Kyungpook National Univ.) and Sung Su Whan(KAIST)

The nonlinearity of several chemical processes is usually approximated by a series of the nonlinear static element and the linear subsystem. In the case of the model that the nonlinear static element precedes the linear subsystem, it is called a Hammerstein model. It is a Wiener model when the order is reserved. Here we investigate a relay feedback identification method for Hammerstein type nonlinear processes. The proposed method separates the identification of the nonlinear static function from that of the linear subsystem by using a relay feedback method. From two times activation of nonlinear processes, we identify he whole range of the nonlinear static function as well as the ultimate information of the linear subsystem.

14:00 – 14:20 **D-FP05-4**

A Study On the EMFG Representation of the Relay Circuits and Ladder Diagram

Kim Hee-Jung, Paek Hyung-Goo and Yeo Jeong-Mo
(Pukyong National University)

It needs a skillful experience to design and implement sequential circuits with a relay circuit or LD (Ladder Diagram). One makes out the operation of relay contacts sequentially in case of analyzing a relay circuit or LD. Still more, the design and analyzing of a complex relay circuit or LD are difficult. In this paper, we propose the EMFG (Extended Mark Graph) representation on relay circuits and LD.