TE01

Process System

15:40-17:40
Room : 1st Floor-Mozart

Chair1 : Jinhoon Choi (Sukang Univ., Korea)
Chair2 : Prasit Julsereewong (KMITL, Thailand)

15:40 – 16:00 **TE01-1**

A Design of Two-mode Controller Using PC-based Lookup Table Technique and PID Control Algorithm

Prasit Julsereewong, Naowarat Sangjeen(KMITL, THAILAND)

- Abstract
- Introduction
- Liquid Level Control System
- Flow Ratio Control System
- Application of Lookup Table Technique
- Experimental Results
- Conclusion

16:00 – 16:20 **TE01-2**

Backpropagation Classification of Statistically

Sungmo Kim, Byungwhan Kim(Sejong Univ., KOREA)

Plasma processing plays a crucial role in fabricating integrated circuits (ICs). Manufacturing ICs in a cost effective way, it is increasingly demanded a computer model that predicts plasma properties to unknown process inputs. Physical models are limited in the prediction accuracy since they are subject to many assumptions. Expensive computation time is another hindrance that prevents their widespread used in manufacturing site. To circumvent these difficulties inherent in physical models, neural networks have been used to learn nonlinear plasma data [1]. Among many types of networks, a backpropagation neural network (BPNN) is the most widely used architecture. Many training variables are ...

16:20 – 16:40 **TE01-3**

Model Predicitve Control of First Order Hyperbolic PDE Systems

Jinhoon Choi, Kwang Soon Lee(Sogang Univ., KOREA)

Most of the process control algorithms in practice are based on the finite dimensional control theory. However, many chemical processes are described by partial differential equations (PDE's) and are infinite dimensional in nature due to spatial variation. Especially when the convection is dominant and thus diffusion can be ignored, chemical processes that are described by a system of first order hyperbolic PDE's. Such processes include tubular reactors, fixed bed reactors and pressure swinging adsorption. Conventionally such infinite dimensional systems described by PDE's are controlled by finite dimensional controllers that are designed through finite dimensional reduction of the process m...

16:40 – 17:00 **TE01-4**

A Case study of an optimal design with structured sampling and simulation

Hongjoon Park, Youngcook Jun(Sunchon Nat'l Univ., KOREA)

This study was motivated how it might be possible to validate structured sampling with orthogonal array for optimal design of a pin. The Taguchi method by orthogonal array, one of the structured sampling methods, has much advantage that is row cost and time saving for experiments. But this method has been applied in limited areas especially for mechanical problems. In this study, we experimented whether the structured sampling is useful for applying optimal design of mechanical elements.
For the experiment, we first set up a mechanical problem which was related to determining optimal parameters associated a pin's crack occurred inside a hole. We, then, calculated combination of...

17:00 – 17:20 **TE01-5**

Wavelet Characterization of Profile Uniformity Using Neural Network

Won Sun Choi, Myo Teak Lim(Korea Univ., KOREA), Byungwhan Kim Kim(Sejong Univ., KOREA)

As device dimension shrinks down to sub 100nm, it is increasingly important to monitor plasma states. Plasma etching is a key means to fine patterning of thin films. Many parameters are involved in etching and each parameter has different impact on process performances, including etch rate and profile. The uniformity of etch responses should be maintained high to improve device yield and throughput. The uniformity can be measured on any etch response. The most difficulty arises when attempting to characterize etched profile. Conventionally, the profile has been estimated by measuring the slope or angle of etched pattern. One critical drawback in this measurement is that this is unable to cap...

17:20 – 17:40 **TE01-6**

INDIRECT FUZZY CONTROLLER FOR LEVEL PROCESSES

Surakit Lertudomsuk, Taworn Benjanarasuth, Sawang Lertthirasuntorn, Jongkol Ngamwiwit(KMITL, THAILAND), Noriyuki Komine(Tokai Univ., JAPAN)

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- Contents 3 Augmented Fuzzy System
- Contents 4 Indirect Fuzzy Controller
- Contents 5 System Stability
- Contents 6 Experimental Results
- Contents 7 Conclusion