Application of fault detection system in semiconductor etching process based on support vector machine

우경섭, 윤인섭*

서울대학교

(esyoon@pslab.snu.ac.kr*)

Fault detection and diagnosis have previously been applied to many chemical processes. Semiconductor processes ,like many other chemical processes, are difficult to model and control because of their inherent complexities and nonlinearities. Furthermore, semiconductor etching process is batch process. so monitoring and fault detection of semicondutor etching process is more complicated by stretching of the time axis resulting in different length of batch. This study suggests the new methodology among the data-driven based on SVM(Support Vector Machine). The protential of the SVM to diagnose process fault in Etching Process to etch the TiN/Al-0.5% Cu/Tin/oxide stack with research not only showed its more improved accuracy and usefulness than those of method based on multi-way PCA in a case study, but also predicted the intensity of the fault exactly. Moreover, the proposed method improved completeness, accuracy and reliability to meet the requirements og the fault diagnosis system for semiconductor process and contributed validation of the applicability of SVM.