

Appication of advanced process control on mixed-product chemical
mechanical polishing process

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Abstract

This research developed a run-to-run (RtR) process control technique on the mix-product chemical mechanical polishing (CMP) process. The model of the mix-product CMP process was constructed by using analysis of variance and time series analysis. Then, it was transferred to the state space form and the extended Kalman filter was employed to estimate the disturbances and update the tool parameter simultaneously. Different methods including time series analysis, double exponentially weighted moving average (D-EWMA), time variant D-EWMA and the proposed method was carried out by CMP real data and the results demonstrated that the performance of the proposed method is better than others.

Keyword : mix-product, chemical mechanical polishing, analysis of variance, time series analysis, extended Kalman filter