

Statistical variable selection of OES signal for identifying key process characteristics in plasma etching

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Plasma etch is key process in semiconductor manufacturing and many research groups try to develop critical dimension shrinking and enhance uniformity. From OES signal, analyzing electron excitation energy can select several dominant wavelengths in plasma reaction. Therefore, excitation energy analysis and dimension reduction technique are applied. In this study, using this technique to analyze 2048 variable OES data sets, the number of selected variables can identify a minimal group of key wavelengths, with an acceptable for overall process. The procedure for variable selection in this study will provide valuable reference for sensor-related applications in semiconductor manufacturing.