

### *Ion Implantation Overview*

#### **Course Description:**

This course is developed for the Semiconductor Processing Industry to provide professional development for a broad audience of employees working for semiconductor manufacturers and suppliers. The intended audiences are those who require a broad overview of the specific process to understand in general terms the potential relationship of this particular process both to upstream and downstream processes. While this course is technical in nature, it does not focus on specific process related information, merely, on general principles of the specific process.

#### **Chapters**

##### Introduction

- Identify the purpose of ion implantation.
- Identify the advantages of ion implantation.
- Identify the components in an ion implant system and their functions.
- Identify the effects of electric and magnetic fields on an ion beam and how these effects are used.

##### The Ion Implantation Process

- Identify the reason dopants are used in semiconductor fabrication.
- Identify three important crystal lattice orientations of silicon.
- Identify the phenomenon of channeling.
- Identify the definitions of projected range and straggle.
- Identify the reason for annealing in ion implantation.
- Identify five techniques for post-implant dose measurement.

##### Key Parameters and Process Control Issues

- Identify the key process parameters of the ion implantation process.
- Identify the primary sources of contamination during the ion implantation process and the most common methods of monitoring them.
- Identify the importance of dose and dose uniformity.
- Identify three factors which can lead to dose non-uniformity and the methods of correcting them.

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