

COURSE OFFERING

The Transition from 22nm to 14nm ADAPTING TO THE 2ND GENERATIONS OF FINFETS

Understand the unique set of fabrication issues posed by the transition from 22nm to 14nm FinFet processing.

duration:

One Day

course brief:

This advanced level course compares and contrasts the central processing issues between 22nm and 14nm FinFET fabrication processes by examining the key processing modules in detail.

Instructor:

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The transition from 22nm to 14nm

ADAPTING TO THE NEW WORLD OF 3D PROCESSING



course objectives:

- 1) To provide an understanding of the key technical challenges involved in the migration from 22nm node to 14nm node technology
- 2) To provide a detailed understanding of the manufacturing differences between the key processing modules for each node.
- 3) To present a global perspective on the central fabrication issues regarding the fabrication of non-classical transistor 3D transistors.

appropriate for:

Designers, R&D, Product, Device, Test and Process engineers, managers and other personnel whose jobs require that they have a deeper understanding of the 28nm-to-22nm node transition.

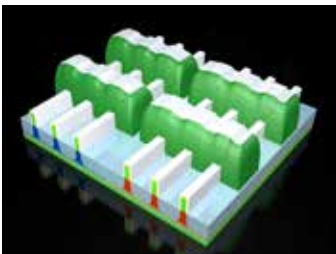
course outline:

Motivation for 3D devices:

- The underlying technical forces that have precipitated the transition to 3D transistors
- 14nm node processing versus 22 nm node; what's the same, what's different?
- Performance advantages of 14nm devices Vs. 22nm devices

Key Processing Challenges:

- A side-by-side comparison of the key processing modules for 14nm and 22nm fabrication methodologies, identifying the key technical differences and similarities of each module, and the critical processing steps and vulnerabilities at each operation. The front-end and back end process flows are examined in detail:
 - Self-Aligned Quadruple Patterning (SAQP) versus SADP
 - Well formation methodology
 - Self-Aligned Double Patterning for gate electrode formation
 - Nitride spacer formation; a key 3D fabrication challenge
 - 3D Source/Drain formation; a new and different reality
 - 3D strain technologies including Epitaxial Silicon, SiGe & SiC stressors
 - FinFet replacement gate methodology
 - Titanium "silicidation"
 - Trench contacts on 3D transistors; a new challenge
 - Backend metallization challenges
 - The new equipment requirements and new processing technologies required for 14nm processing



The course content is presented in a clear, highly visual and easy-to-understand manner. It is taught by a world-class instructor who has over 25 years of hands-on experience in the field of silicon fabrication and who is an award winning public speaker.

The course notes are technically current, reproduced in high resolution color and profusely illustrated with high quality 3D graphics and TEMs of real-world devices.

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