

Three Dimensional Systems Integration - Concepts and Challenges

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introduction to the topic:

As three dimensional integration technologies get closer to market acceptance and further from research and into products reliability of the systems becomes much more important. This technical overview tutorial will address the challenges associated with using the third dimension for systems level integration. It will also provide an overview of 3-D integration technologies and the challenges associated with maintaining high reliability and functionality in 3D integrated systems. The potential reliability hazards in the major process steps associated with this technology area will be discussed and the challenges associated with integrating mixed technology systems will be described. This tutorial will provide an overview of the current state of the art in 3D and an indication of some potential technology bottlenecks that will require some research effort in the coming years.

biography of tutorial speaker:

Dr. Alan Mathewson is a senior member of technical staff at the Tyndall National Institute, Cork. He currently has responsibility for systems integration activities in the Tyndall with a particular emphasis on the integration of autonomous wireless sensor systems. He has been involved in the development of three dimensional integrated circuits and systems for over twenty years and has worked on several of the major three dimensional integrated circuit technologies studied under the European ESPRIT and ICT framework programmes. During his years of research at NMRC/Tyndall, Dr. Mathewson has been responsible for a large number of innovations in silicon integrated circuit technology, especially relating to novel devices and processes and their characterization and modelling.

To date twenty four PhDs and forty five M.Eng.Sc projects have been completed, under his supervision and more than two hundred and fifty publications in peer reviewed specialist journal and conference proceedings have been presented. Nine patents have been deposited.