



Contribution ID: 119

Type: **not specified**

HOW ADVANCED PACKAGING IS CHANGING INTEGRATED CIRCUITS

Friday, 3 September 2021 12:00 (1 hour)

ABSTRACT of the LECTURE:

For decades semiconductor advancement has depended almost entirely on ever shrinking transistors and wires. This trend, known as Moore's Law, has enabled the modern miracle electronics which we all use and enjoy. Today however, we are reaching the physical limits of shrinking transistors and wires further. Manufacturing today's nanometer transistors requires billions of euros in capital investment and many tens or even hundreds of millions more for each integrated circuit design. Perhaps the worst aspect is the scant improvement these large sums of money actually bring. However, there is a new path forward. One focused on applying advanced packaging technology to integrated circuits.

Advanced packaging uses semiconductor fabrication technologies to integrate smaller chips or "chiplets" into a larger single chip. Using semiconductor manufacturing techniques to accomplish packaging, yields tightly coupled circuitry that acts and performs as if it were built as a single chip. However, the small chiplets can be manufactured in a wide variety of technologies and thus the performance of the combined chiplets can far outperform what could be created as a single monolithic circuit. Chiplets can also be reused in many designs with no redesign or reengineering. Advanced packaging and chiplets are already producing higher performance lower cost integrated circuits with far less capital and development expense and doing so in shorter development cycles.

This talk will discuss advanced semiconductor packaging technologies and how its application can enable more from semiconductors.

ABOUT NHANCED SEMICONDUCTORS:

Brilliant Concepts Deserve Brilliant Implementation

If your product would benefit by 3D architecture, a smart interposer, chiplet integration, or other advanced packaging, let NHanced Semiconductors be your complete supply chain solution. We provide turnkey assemblies and components including custom design, design consultation, TSV insertion, and access to the latest and best semiconductor technologies. Take advantage of our deep experience in 3D and 2.5D enablement. We do multi-die design, assembly, sourcing, packaging, final test –everything you need to carry your project from original idea to beautiful finished device.

NHanced Semiconductors, Inc., holds a deep library of technical expertise in cutting edge semiconductor technologies. The company has extensive experience in advanced packaging: 3D-ICs, silicon interposers, 2.5D, chiplets, additive silicon manufacturing, photonics, microfluidics, and other innovative solutions.

Our development and manufacturing facility (fab) specializes in BEoL and advanced packaging. The fab works with a large variety of materials including III-V compound semiconductors. It currently performs small volume manufacturing, in-house process development, and customer prototyping. The fab is being expanded to house an additional dedicated high-volume production line for advanced packaging.

In addition to its fab, the company boasts a seasoned team of design engineers. Their specialized skills in 3D semiconductor design have built a strong customer base. Working under the leadership of 3D pioneer Bob Patti, they extend the functionality of advanced ICs in exciting new directions.

(Credit: NHanced Semiconductors Inc, Website announcement)

Presenter: Dr PATTI, Robert (NHanced Semiconductors Inc., Napperville, Ill, USA)

Session Classification: MORNING SESSION 9, PLENARY LECTURES