



FOR IMMEDIATE RELEASE:

Advanced packaging is everyone's business!



Extracted from: Status of the Advanced Packaging Industry, Yole Développement, 2019

[SYNAPS 2020](#) – Symposium by Yole Développement & NCAP on Advanced Packaging for Semiconductors - Suzhou, China on March 31 to April 1, 2020

LYON, France – December 12, 2019: “Changes in the semiconductor supply chain and shifting business models, as well as uncertainty related to US-china trade, creates a growing number of huge opportunities for some, while posing a threat to others,” comments **Emilie Jolivet, Division Director, Semiconductor & Software at Yole Développement (Yole)**. “At Yole, we are continuously monitoring the advanced packaging industry to get a comprehensive understanding of the market issues and technical challenges. Advanced packaging processes are at the epicenter of all semiconductor manufacturing process steps today. For all semiconductor companies, advanced packaging is strategic in responding to the industry evolution directly impacted by the megatrends - 5G, AI¹ and IoT² - and in ensuring the development of their activities.”

Yole announced in its [Status of Advanced Packaging Industry report](#) a US\$44 billion market in 2024, with a 7.9% CAGR³ between 2018 and 2024.

In this dynamic context, and one year after a successful edition, the market research & strategy consulting company and its partner [NCAP China](#) are pleased to announce [SYNAPS](#), the Symposium powered by Yole Développement & NCAP China on Advanced Packaging for Semiconductors, previously known as the Advanced Packaging & System Integration Technology Symposium.

After 5 editions, both partners, supported by a [Technical Committee](#), are now back with an exciting 2020 program for the overall advanced packaging community. SYNAPS Technical Committee includes this year: Farhang Yazdani, President & CEO⁴, BroadPak; Amy Leong, CMO⁵ & Senior VP of M&A⁶, FormFactor; Ram Trichur, Global Head of semiconductor packaging market segment, Henkel; Dr. Peng Sun, Director of Technology Division, National Center for Advanced

¹ AI : Artificial Intelligence

² IoT : Internet of Things

³ CAGR : Compound Annual Growth Rate

⁴ CEO : Chief Executive Officer

⁵ CMO : Chief Marketing Officer

⁶ M&A : Mergers & Acquisitions

Packaging, NCAP China; Santosh Kumar, Principal Analyst & Director Packaging, Assembly & Substrates, Yole Korea and more.

SYNAPS 2020 edition is the only advanced packaging symposium fully dedicated to the advanced packaging industry, its technologies and applications. The Symposium will take place on March 31 and April 1st in Suzhou, China. Over two days, Yole and NCAP China will help you to gain a clear vision of the latest innovations and to identify new business opportunities.

Sponsorships and calls for papers are now available on [SYNAPS website](#). Save the date right now!

Facing a moving target, mostly due to the megatrends, the semiconductor companies are adapting their strategies. There is no doubt the semiconductor supply chain and the advanced packaging industry behind it are also undergoing change at various levels.

Some players have successfully managed to transform to a new business model and significantly impact the IC⁷ manufacturing chain, while others have failed to take off.

Different players have different motivations to move or expand into new businesses – software players like Google, Microsoft, Facebook, and Alibaba, for example, are designing their own processors in order to have system-level integration / customization and control of the supply chain up to assembly level.

The biggest change is noticed in foundries expanding into the advanced packaging business. Though they are relative newcomers, their impact has been significant:

- TSMC leads in innovation in the fan-out and 3D advanced packaging platforms, with various offerings such as InFO (and its variants), CoWoS, WoW, 3D SoIC, and more. For TSMC, advanced packaging has become a full-fledged business, and the company expects US\$3 billion revenue from its advanced packaging activities in 2019, which would place them fourth among OSATs⁸.
- Elsewhere, UMC is a supplier of Si⁹ interposers for 2.5D packaging, and recently partnered with Xperi to optimize and commercialize ZiBond and DBI technologies for a wide range of semiconductor devices.
- Meanwhile, XMC provides 3D IC TSV¹⁰ packaging for image sensors and high-performance applications. In general, these players are instrumental in moving packaging from substrate to a silicon platform.

⁷ IC : Integrated Circuit

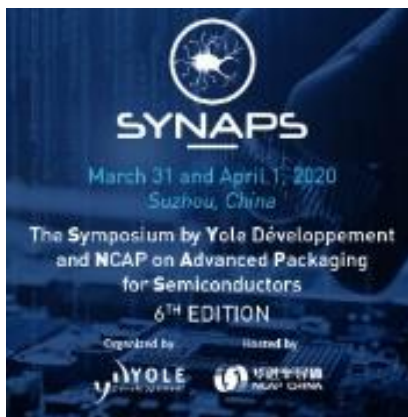
⁸ OSAT : Outsourced Semiconductor Assembly and Test

⁹ Si : Silicon

¹⁰ TSV : Through Silicon Via

Foundries are not the only ones... Indeed, IC substrate and PCB¹¹ manufacturers, like SEMCO, Unimicron, AT&S, and Shinko, are entering the advanced packaging arena with competitive technologies. Panel-level fan-out packages and embedded dies (and passives) in organic substrates are part of their portfolio. “

“These companies are eating the lunch of OSATs – especially those involved in the advanced packaging business,” states **Favier Shoo, Technology & Market Analyst, Advanced Packaging at Yole**. “To remain competitive, we will see lots of M&A¹² activity in the OSAT sector in the coming years at various levels: consolidation amongst big players, the merger or acquisition of two midsize players with complementary service offerings and small OSATs (or WLP houses) being acquired by big players. Niche WLP players like Deca Technologies and LB Semicon are strong candidates for acquisition...” (See a detailed analysis of the [2019 OSAT ranking](#) developed by Yole).



Trade tension between the U.S. and China could potentially disrupt semiconductor growth and cast uncertainty over the supply chain. The picture is still unclear and there is lots of confusion, intermingled with many “ifs” and “buts”.

“Multiple scenarios are possible depending on whether there is an all-out trade war or if a new trade deal

is reached, either with concessions from each side, or the status quo is being maintained,” comments Santosh Kumar from Yole...

SYNAPS will be the place to be in 2020.

2020 SYNAPS will be a powerful mix of key technology sessions related to the evolution and innovation in the industry. The Symposium will offer effective networking time with advanced packaging executives, organized within the impressive Suzhou’s advanced packaging ecosystem. Yole, NCAP China and the Technical Committee will combine their technical and market expertise to build an exciting program.

Dr Cao LiQiang, NCAP’s CEO asserts: “With a strong commitment to the development of innovative advanced packaging technologies and partnerships in China, we are again part of SYNAPS in 2020. At NCAP China, we firmly believe that 2020 edition will be a success, based on its 5-year reputation, hot topics and presentations selected by the Technical

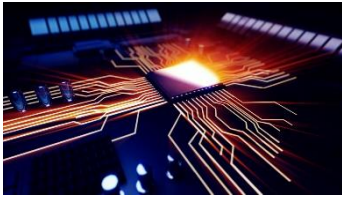
¹¹ PCB : Printed Circuit Board

¹² M&A : Mergers & Acquisitions

Committee. Don't miss the opportunity to be up-to-date on the latest technology trends and to expand your business in China."

"With more and more functionalities, companies have to innovate," says Emilie Jolivet from Yole: "They have to manage their ability to integrate more and more components on a single die and offer a final product with a high reliability level. With SYNAPS 2020 edition, we invite you to dive deep into the advanced packaging technologies, understand the latest innovations and discover new business opportunities."

Save the date right now and let us meet in Suzhou, China on March 31, 2020!

ABOUT THE 2019 ADVANCED PACKAGING COLLECTION OF REPORTS:**[Status of the Advanced Packaging Industry](#)**

Despite the semiconductor industry slowdown, advanced packaging market is growing at an impressive rate of 8% CAGR between 2018 and 2024. - Produced by Yole Développement

Companies cited in the report:

Altera, Amkor, Analog Devices, Ardentec, Atmel, AOI Electronics, Apple, ARM, ASE, Avago, Broadcom, Carsem, China WLCSP, Chipbond, ChipMOS, Cisco, Cypress Semiconductor, Deca Technologies, Greatek, IC Interconnect, Fairchild, Facebook, Flip Chip International, Formosa, Freescale, Fujitsu, GLOBALFOUNDRIES, Google, Hana Micron, Huawei, Inari Berhad and more ...

As well as:

- [Automotive Packaging: Market and Technologies Trends](#)
Vehicle autonomy and electrification are encouraging advanced packaging's growth in this industry.
- [Die Attach Equipment Market](#)
Growing business and new technical challenges are ensuring consolidation of the die attach equipment market.
- [Equipment and Materials for Fan-Out Packaging](#)
Electronic packaging equipment and materials revenue growth is highly reliant on big players' investments. A new killer application is needed to fuel robust growth.
- [Status of Advanced Substrates](#)
Demands from the new digital age are waking up the sleeping substrate giants.
- [Fan-Out Packaging: Technologies and Market Trends](#)
Samsung and PTI, with panel-level packaging, have entered the Fan-Out battlefield.
- [2.5D / 3D TSV & Wafer-Level Stacking: Technology & Market Updates](#)
2.5D heterogeneous and 3D wafer-level stacking are reshaping the packaging landscape.

About the advanced packaging team:

- **Emilie Jolivet** is Director of the Semiconductor & Software Division at Yole Développement, part of Yole Group of Companies, where her specific interests cover package & assembly, semiconductor manufacturing, memory and software & computing fields.
Based on her valuable experience in the semiconductor industry, Emilie manages the expansion of the technical and market expertise of the Semiconductor and Software Team. The team interacts daily with leading companies allowing semiconductor & software analysts to collect a large amount of data and integrate their understanding of the evolution of the market with technology breakthroughs.
In addition, Emilie's mission focusses on the management of business relationships with semiconductor leaders and the development of market research and strategy consulting activities inside the Yole group. Emilie Jolivet holds a master's degree in Applied Physics specializing in Microelectronics from INSA (Toulouse, France). After an internship in failure analysis at Freescale (France), she was an R&D engineer for seven years in the photovoltaic business where she co-authored several scientific articles. Enriched by this experience, she graduated with an MBA from IAE Lyon and then joined EV Group (Austria) as a business development manager in 3D & Advanced Packaging before joining Yole Développement in 2016
- **Santosh Kumar** is currently working as Principal Analyst and Director Packaging, Assembly & Substrates, Yole Korea. Based in Seoul, Santosh is involved in the market, technology and strategic analysis of the microelectronic assembly and packaging technologies. His main interest areas are advanced IC packaging technology including equipment & materials. He is the author of several reports on fan-out / fan-in WLP, flip chip, and 3D/2.5D packaging.
Santosh Kumar received the bachelor and master's degree in engineering from the Indian Institute of Technology (IIT), Roorkee and University of Seoul respectively. He has published more than 40 papers in peer reviewed journals and has obtained 2 patents. He has presented and given talks at numerous conferences and technical symposiums related to advanced microelectronics packaging.

- **Favier Shoo** is a Technology and Market Analyst in the Semiconductor & Software division at Yole Développement, part of Yole Group of Companies. Based in Singapore, Favier is engaged in the development of technology & market reports as well as the production of custom consulting. While spending 7 years at Applied Materials as a Customer-Application-Technologist in the advanced packaging marketplace, Favier developed a deep understanding of the supply chain and core business values. Being knowledgeable in this field, Favier has provided training and held numerous technical review sessions with industry players. In addition, he has obtained 2 patents. Favier had previously worked at REC Solar as a Manufacturing Engineer to maximize production capacity. Favier holds a bachelor's degree in Materials Engineering (Hons) and a Minor in Entrepreneurship from Nanyang Technological University (NTU) (Singapore). Favier was also the co-founder of a startup company where he formulated business goals, revenue models and marketing plans.

ABOUT NCAP



The National Center for Advanced Packaging Co., Ltd. (NCAP China) is a joint venture established by ten investors, including the leaders of the IC packaging and testing industry in China. NCAP's goals are to establish a world class R&D center for advanced packaging and system integration, to play a leading role in the development and marketing of advanced technologies for microelectronics packaging and system integration, and to promote and sustain the technological and commercial progress of the microelectronics industry in China.

As a national center for advanced packaging, testing and system integration, NCAP, in collaboration with system OEMs and supply chain partners, aggressively pursues research and development in order to offer complete solutions for the IC industry. NCAP's current research areas include: 2.5D/3D technology (including TSV), high-density wafer level packaging, SiP product development capabilities, and certain advanced materials and equipment technologies for microelectronics packaging.

The NCAP R&D platform includes a 3200-m² fully equipped cleanroom, for 300mm wafer size, for 2.5D/3D IC backend processes, and packaging assembly, testing and reliability, as well as design and simulation capabilities. More information on www.ncap-cn.com.

ABOUT YOLE DEVELOPPEMENT



Founded in 1998, Yole Développement has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services, reverse engineering and reverse costing services as well as IP and patent analysis. With a strong focus on emerging applications using silicon and/or micro manufacturing, the Yole group of companies has expanded to include more than 80 collaborators worldwide covering MEMS & Sensors - Imaging - Medical Technologies - Compound Semiconductors - RF Electronics - Solid State Lighting - Displays - Photonics - Power Electronics - Batteries & Energy Management - Advanced Packaging - Semiconductor Manufacturing - Software & Computing - Memory and MORE...

Yole Développement, the market research, technology and strategy consulting company, along with its partners System Plus Consulting, PISEO and KnowMade, support industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to grow their business. For more information, visit www.yole.fr and follow Yole on [LinkedIn](#) and [Twitter](#).

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