Advanced packaging is crucial for the ambition of semiconductor companies[1]

OUTLINE:

- Market forecasts:
  The advanced packaging market is expected to grow at 6.6% CAGR[2] $_{2019\text{-}2025}$, reaching US$42 billion in 2025.
  By technology platform: the highest revenue CAGRs is expected from 2.5D / 3D stacking IC[3], embedded die, and fan-out. Yole announces 21%, 18% and 16% of the total market, respectively.
- Supply chain:
  TSMC, Intel, Samsung, Amkor, ASE etc… are all actively involved in the advanced packaging market space.
- COVID-19 Impact:
  Due to the outbreak of COVID-19, the advanced packaging market is expected to decrease by 6.8% YoY[4] in 2020.
  However, Yole's analysts are quite positive and expect this market to rebound in 2021.
- SYNAPS 2021 - Advanced Packaging & System Integration Technology Symposium, 2021 edition on May 18-20, 2021. Register on i-Micronews.

"Leading players must act fast and play on their strengths to innovate and compete. And advanced packaging could most certainly be a pivotal approach," asserts **Favier Shoo, Team Lead Analyst, Advanced Packaging at Yole Développement (Yole).**

With a 6.6% CAGR between 2019 and 2025, the advanced packaging market is expected to more than double its revenue over the period. Yole's advanced packaging team estimates revenue to be US$42 billion in 2025. This is almost triple the expected growth rate for the traditional packaging market, which is growing at 2.2% CAGR in the same period.

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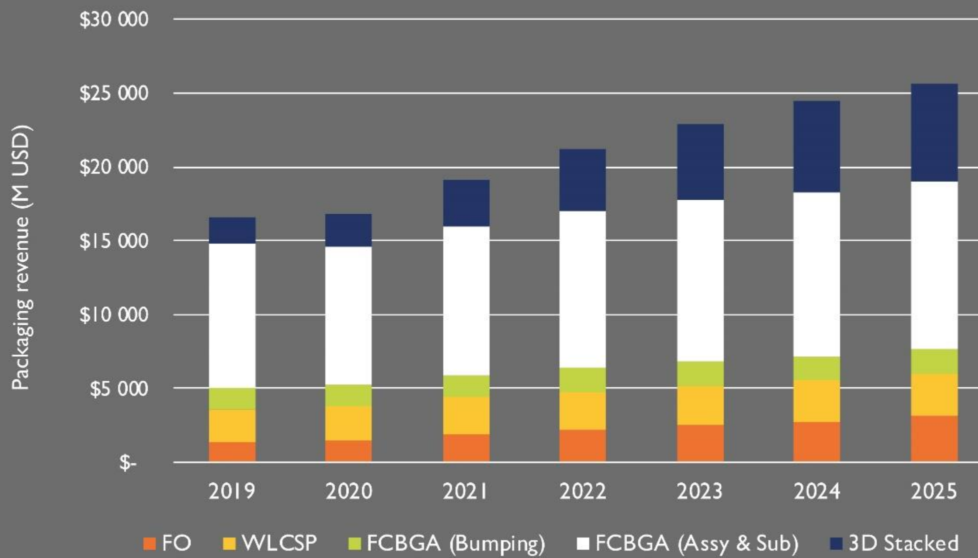
[1] Extracted from:
Status of the Advanced Packaging Industry 2020, Yole Développement
Advanced Packaging Quarterly Market Monitor, Yole Développement, Q4 2020
[2] CAGR: Compound Annual Growth Rate
[3] IC: Integrated Circuit
[4] YoY: Year-over-Year

Press Release



In this dynamic context and encouraged by 7 consecutive years of successful symposiums that have attracted more than 200 participants on average, Yole and its partner NCAP China[5] are proud to announce this year again, the Symposium by Yole and NCAP on Advanced Packaging Semiconductors – SYNAPS, May 18-20, 2021.

As a digital event, SYNAPS offers a unique place in the world where leading companies can share their vision of the advanced packaging industry, evaluate the emerging platforms, and identify business opportunities. SYNAPS's aim is to deliver a comprehensive understanding of the status of the advanced packaging industry and help companies to be part of the 'tomorrow' industry. Register on i-Micronews.

Indeed, Yole investigates disruptive advanced packaging technologies and related markets in depth, to point out the latest innovations and underline the business opportunities. In this regard, Yole proposes an impressive collection of reports and monitors. Amongst this collection, there are:

- The Status of the Advanced Packaging Industry 2020 report follows the evolution of the industry, offers an understanding of the market and key strategies of the leading advanced packaging companies and much more…
- The Advanced Packaging Quarterly Market Monitor is published every beginning of March (Q1), June (Q2), September (Q3) and December (Q4)… Aim of these services

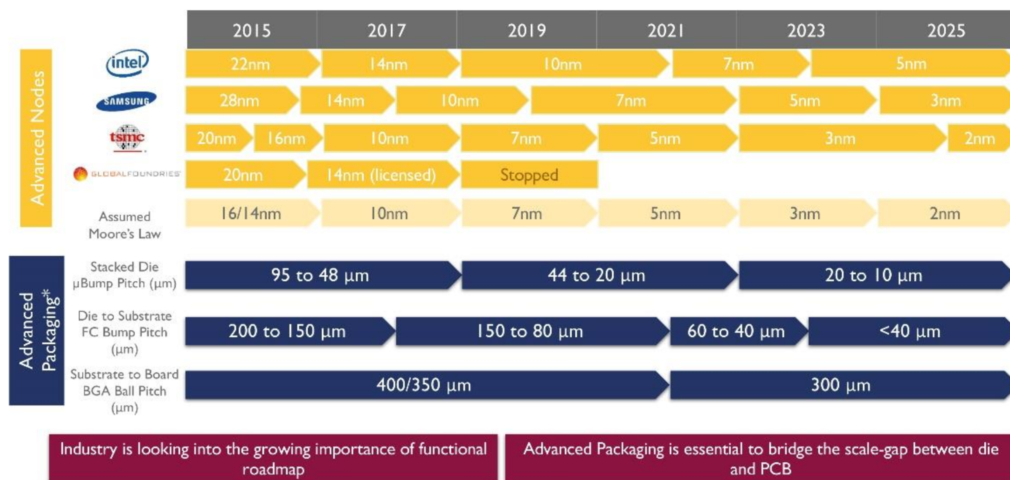
[5] NCAP: National Center for Advanced Packaging

is to provide an in-depth coverage of rapidly changing market dynamics and main players' status and strategy.

What is the status of the advanced packaging industry? How is it evolving? Which platforms are dominating the market? What are the underlying applications and their evolution? What is the impact of the COVID-19 outbreak? …Yole is following the evolution of the industry and technologies all year long and is pleased to announce today, with its partner NCAP China, SYNAPS 2021.

2015-2025 technology roadmap in wafer: From nano-scale to micro-scale

(Source: Status of the Advanced Packaging Industry report, Yole Développement, 2020)



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The advanced packaging market is pulling in big players from all levels of the semiconductor supply chain. TSMC, Intel, Samsung, Amkor, ASE etc… are all actively involved in this market space, well positioned to capture the business value. Advanced packaging has become essential for semiconductor innovation. Advanced packaging platforms allow this industry to explore new eras and innovate. And today, advanced packaging technologies are the key to bridge the gap between die and PCB.

Due to the impact of COVID-19, the advanced packaging market is expected to decrease by 6.8% YoY in 2020.

"However, at Yole we are quite positive and expect this market to rebound in 2021, with about 14% YoY growth", asserts **Emilie Jolivet, Director, Semiconductor, Memory & Computing at Yole**.

Santosh Kumar, Principal Analyst & Director Packaging, Assembly & Substrates, Yole Korea explains: *"The highest CAGR revenue is expected from 2.5D / 3D TSV IC, embedded*

die, and fan-out with 21.3%, 18%, and 16% market share, respectively. Adoption is clearly being accelerated by data-driven products shaped by new users' behavior as a consequence of COVID-19, from the surge in digital entertainment, remote working and scaling of digital operations."

For example, fan-out in mobile, networking, and automotive; 3D stacking in AI[6]/ML[7], HPC[8], datacenters, CIS[9], and 3D NAND; and embedded die in automotive, mobile, and base stations. By revenue segment, the mobile & consumer market constituted 85% of total advanced package revenue in 2019, and Yole predicts a 5.5% CAGR to constitute 80% of total advanced packaging revenue by 2025. In parallel, telecom & infrastructure is, in revenue, the fastest-growing segment. This segment represents about 13% of the total advanced packaging market. Yole's analysts expect it will increase its market share from 10% in 2019 to 14% by 2025. Meanwhile, in terms of revenue, the automotive & transportation segment will grow at a 10.6% CAGR during the period 2019 – 2025, reaching about US$1.9 billion in 2025.

It is a fact. Advanced packaging is at the heart of innovation.

Especially for the semiconductor industry where megatrends are bringing new challenges. Leading advanced packaging companies from all over the world will come to exchange ideas on their vision and future perspectives at SYNAPS, 2021 edition.

From **Xiao Ke, General Manager of NCAP China**: *"There is no doubt that COVID-19 has posed challenges to the world. But it has also had a positive impact on the semiconductor industry because it has changed the living and working life, such as work from home and investment in automation in factories, which will definitively lead to rapid growth in the demand for computing, microprocessors, and memory devices. In this context, 2021 will be a year full of opportunities for the semiconductor industry. Yole and NCAP China wish to promote international communication and global cooperation in the advanced packaging industry and boost the global semiconductor industry by organizing SYNAPS. You are welcome to take part in SYNAPS 2021, to develop your business in China!"*

Status of the Advanced Packaging Industry report and Advanced Packaging Quarterly Market Monitor both explore in-depth the field of advanced packaging. In parallel, SYNAPS is the place to be to obtain a comprehensive yearly view of the latest market updates and technology developments. Make sure to get a relevant understanding of this industry and follow us on i-Micronews.com.

[6] AI: Artificial Intelligence
[7] ML: Machine Learning
[8] HPC: High-performance Computing
[9] CIS: CMOS Image Sensor

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Press Release

All year long, Yole Développement publishes numerous advanced packaging related reports and monitors. In addition, experts realize various key presentations and organize key conferences.
Make sure to be aware of the latest news coming from the industry and get an overview of our activities, including interviews with leading companies and more on i-Micronews. Stay tuned!

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About the Packaging Team

Vaibhav Trivedi is a Senior Technology & Market analyst at Yole Développement (Yole) working with the Semiconductor & Software division. Based in the US, he is a member of Yole's advanced packaging team and contributes to analysis of ever-changing advanced packaging technologies. Vaibhav has 17+ years of field experience in semiconductor processing and semiconductor supply chain, specifically on memory and thermal component sourcing and advanced packaging such as SiP and WLP. Vaibhav has held multiple technical and commercial lead roles at various semiconductor corporations prior to joining Yole. Vaibhav holds a Bachelor of Science in Chemical Engineering, and Master of Science of Material Science from University of Florida in addition to an MBA from Arizona State University.

Santosh Kumar is currently working as Principal Analyst and Director Packaging, Assembly & Substrates for Yole Développement's activities in Korea. Based in Seoul, Santosh is involved in the market, technology and strategic analyses 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's 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 Team Lead Analyst in the Packaging team within Semiconductor, Memory and Computing Division at Yole Développement (Yole), part of Yole Group of Companies. Based in Singapore, Favier manages an international team and develops the technical expertise and market know-how within the team. Favier also focuses on the production of technology & market reports, conducts strategic consulting and custom studies. As an acknowledged professional in the semiconductor packaging marketspace, Favier is regularly engaged in international conferences, with presentations, keynotes, and panel review sessions. During 7 years at Applied Materials as a Customer Application Technologist in the advanced packaging field, Favier developed an in-depth understanding of the supply chain and core business values. Prior to that, Favier worked at REC Solar as a Manufacturing Engineer to maximize production utilization. Favier holds a Bachelor's 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.

Emilie Jolivet is Director of the Semiconductor, Memory & Computing 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

About report & monitor

Advanced Packaging Quarterly Market Monitor

Flip chip packaging and Wafer level packaging reach new heights crossing $12 B threshold by 2025 amid coronavirus pandemic as global demand for semiconductor devices soars to new high. is published every beginning of March (Q1), June (Q2), September (Q3) and December (Q4). – Performed by Yole Développement

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Press Release

Status of the Advanced Packaging Industry 2020

OSATs, foundries, and IDMs all want to impact the growing advanced packaging market. – Performed by Yole Développement

Companies cited:

Amkor, Analog Devices, Ardentec, Atmel, AOI Electronics, Apple, ARM, ASE, Avago, Bitmain, 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, Intel, Intersil, J-Devices, JCET, King Yuan, Linear Technology, LB Semicon, Lingsen Precision, Maxim, MaxLinear, MediaTek, Microchip, Micron, Microsemi, Movidius, Nantong-Fujitsu, Nanium, Nepes, Nvidia, NXP, ON Semiconductor, OptoPAC, Orient Semiconductor, Powertech Technology, Renesas, Qualcomm, Rohm, Samsung, SilTech, Sigurd, SK Hynix, Softbank, SPIL, STMicroelectronics, STATS ChipPAC, STS Semiconductor, Teraprobe, Texas Instruments, Tianshui Huatian, Tong Hsing, Toshiba, TSMC, Unisem, UTAC, Walton Advanced Engineering, and more…

Related reports:

- Apple M1 System-on-Chip
- WLCSP/ Fan-In Packaging Technologies and Market 2020
- High-End Performance Packaging: 3D/2.5D Integration 2020
- Fan-Out Packaging Technologies and Market 2020

About Yole Développement

Founded in 1998, Yole Développement (Yole) 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 and 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… More

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