



## The Big Reveal: Who are the Winners of the 2023 3D InCites Awards? – March 7, 2023

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Mar 07, 2023 · By Francoise von Trapp



This is by far my favorite blog post to write each year; the one where I get to announce the winners of the 3D InCites Awards. This year we had 36 nominees for 10 2023 3D InCites Awards categories, representing companies from around the world, all working to advance the heterogenous integration roadmap. Additionally, our two special awards, the SemiSister DEI Award, and the 3D InCites sustainability award recognize the efforts of semiconductor companies whose efforts in diversity equity and inclusion; and sustainable semiconductor manufacturing are affecting real change for the industry. Thank you to this year's platinum sponsors, [ASE Group](#), [EV Group](#), and [KLA](#); our gold sponsors, [Evatec](#), and our silver sponsor, [Veeco](#). As in past years, a portion of the proceeds from the awards goes to support the [3D InCites DEI Start-up Fund](#), established to help tech start-ups owned by women and underrepresented minorities grow and thrive.

As in past years, the winners of the awards were selected by a panel of four expert judges, with the online vote serving as the 5<sup>th</sup> judge, or in some cases, the tie-breaking vote. Our own Phil Garrou; IMAPS President, Beth Keser; Steffen Kröhnert, ESPAT Consulting; and Bob Smith, SEMI ESDA Consortium, judged the technology awards. We tallied their results together with the online ballot results to come up with the results.

A panel of judges selected both the Sustainability Award and Award for DEI. This year's judges for the SemiSister DEI Award included official members of SemiSisters, Margaret Kindling, Sr. Program Manager, Diversity, Equity, Inclusion, SEMI Foundation; Veronique Veronique Pequignat, Director International Actions, Invest in Grenoble Alpes; and Joanne Itow, Managing Director, Semico Research.

Dean Freeman, Chief Analyst, Freeman Technology and Market Advisors; and Julia Goldstein, Owner, JLFG Communications and author of several books on sustainability; returned as judges for the 2023 3D InCites Sustainability Awards. Both Julia and Dean blog regularly on 3D InCites on the topic of [sustainable semiconductor manufacturing](#). They were joined by Britta Grundke, Head of Sustainability at EMD Electronics, representing the 2022 winner of the Sustainability Award. And now, on to the real reason you're reading this blog post – to find out who won the 2023 3D InCites Awards!

### **Sustainability Award – TEL**



While all four finalists for the 2023 Sustainability Award — Henkel Corporation, [SEMI](#), TSMC, and TEL —are all working to improve sustainability in the semiconductor industry, TEL stood out as the leader among them. According to the judges, TEL performed the best against the sustainability goals presented in its 2022 sustainability report, performing well in all categories. Specifically, the company progressed in waste reduction, energy conservation, water conservation, and identifying GHG used in their processes. While TEL accomplished this mainly by ramping up the use of renewable energy, its expected certification to science-based targets (SBT) in 2023 shows a commitment to further reductions. TEL also runs programs that reward innovative ideas from employees and encourage environmental responsibility throughout the supply chain.

### **SemiSister Award for DEI – Deca**



Similarly, the four finalists for the 2023 SemiSister Award for DEI — [Deca](#), Dupont, Lam Research, and Soitec — should all be applauded for prioritizing DEI at their companies. However, as Margaret Kindling explained, “In previous years, the DEI award went to very large companies like Lam Research (2021) and AMD (2022) based on the publicly available information. This year, we based our selection not only on what has been achieved so far by a larger company but the possibility and growth mindset of a small company. Deca sets the example of what other

small companies can and should strive for regarding diversity, equity, inclusion, and belonging.”



### Device Manufacturer of the Year – Qorvo

A newcomer to the 3D InCites Awards, this year’s Device Manufacturer of the Year Award goes to Qorvo for its Advanced State-of-the-Art RF Semiconductor Packaging Center. Qorvo® was selected by the U.S. government to create a State-of-the-Art (SOTA) Heterogeneous Integrated Packaging (SHIP) RF production and prototyping center in Richardson TX. Under the SHIP program, Qorvo is expanding its capabilities in Texas to create a SOTA facility that will design and deliver the highest levels of heterogeneous packaging integration.

### Device Technology of the Year – ASE VIPack™



This is not ASE’s first 3D InCites award. In 2021, they were the first company to be presented with the 3D InCites Sustainability Award. This year, they are being acknowledged for their breakthrough scalable heterogeneous integration platform, the VIPack™, or as I like to call it – the Six Pack.

First introduced at the 2022 ECTC, ASE has been making a splash all year with VIPack™, designed to expand in alignment with industry roadmaps. It definitely caught the judges’ attention for its core technology pillars supported by a comprehensive and integrated co-design ecosystem. It provides solutions that support leading-edge high-performance computing (HPC), artificial intelligence (AI), machine learning (ML) and network applications, as well as optical interconnects.

## Engineer of the Year – Markus Leitgeb, AT&S



Advanced IC substrates are a critical area for meeting the next-generation requirements for heterogeneous integration and advanced packaging. As winner of the 2023 3D InCites Engineer of the Year award, Markus is recognized for his work developing [AT&S](#)' embedded component packaging (ECP®), and bringing it to the production level. He leads the R&D team for Micro Electronics in AT&S, which is developing new concepts for IC Substrates and Advanced Packaging Solutions. Markus joined AT&S in December 2000 after graduating from Leoben University, Austria. He was responsible for the evaluation and implementation of new testing methodologies (e.g. Drop Test) and the development of alternative manufacturing concepts for flexible interconnections as well as cavities. Markus has filed more than 100 patents and has published several papers in the field of PCBs and Packaging (2014 IPC APEX EXPO Best International Paper Award). Markus is an active member of iNEMI and in the Packaging Technologies subcommittee of ECTC.

## Equipment Supplier of the Year – ClassOne



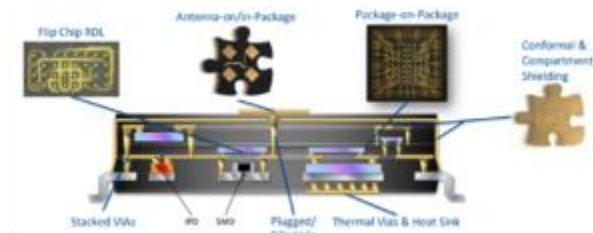
This is ClassOne's first time being nominated for a 3D InCites Award. It's only recently that the company has been on 3D InCites radar as a player in the advanced packaging and heterogeneous integration space. In 2022, ClassOne significantly broadened the heterogeneous integration capabilities of its Solstice™ single-wafer wet-processing platform to include electroplating and surface preparation (SP) processes. So now in addition to micropillar, high-aspect-ratio TSV, and RDL, surface prep processes like solvent strip, wet etch, metal lift-off, and single-wafer cleaning can all be integrated into one system. Moreover, furthering Solstice's role as an enabling technology for HI, ClassOne and Fraunhofer ENAS announced a partnership to advance hybrid bonding capability for wafer-to-wafer and chip-to-wafer advanced packaging applications.

## Herb Reiter Design Tool Provider of the Year – Xpedic



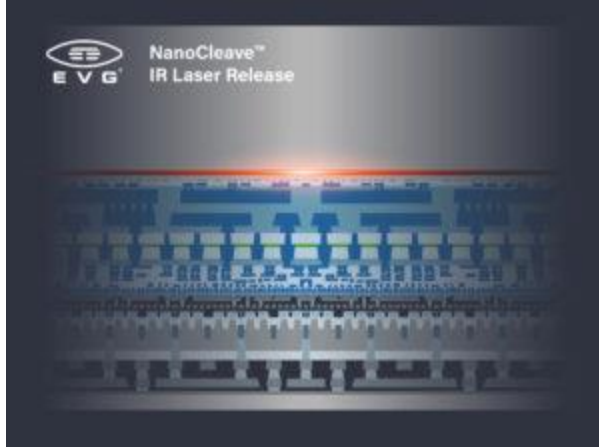
First-time 3D InCites Award nominee, Xpedic was selected for its Metis platform, developed to address the signal/power integrity challenges arising from the advanced packaging for 2.5D/3DIC chiplet designs. Its multi-scale capability and capacity advantage enables unified EM simulation of die, interposer, and substrate without resorting to an error-prone cut-and-stitch approach used by legacy EDA tools. Its multi-mode option offers engineers a choice of speed and accuracy to cover design phases from architectural exploration to sign-off. Xpedic has collaborated with ecosystem partners to qualify Metis in various mainstream advanced packaging technologies. Metis has been widely adopted by the leading IC companies in designing next-generation HPC and AI chips in the data center and automotive market.

## Materials Supplier of the Year Award – Henkel Corporation



Another first-time nominee, Henkel is being recognized for achieving several innovations in 2022 that address some of the most pressing issues in semiconductor packaging including high thermal requirements, transistor scaling, advanced Si node chip integration, and ongoing miniaturization. In the die-attach space, three new high-reliability materials were commercialized: a non-sintering high-thermal 30 W/m-K paste, an ultra-high-thermal 165 W/m-K pressureless sintering material, and a BOM simplification die-attach film for leadframe and laminate packages. In the flip chip protection arena, Henkel debuted a capillary underfill for leading-edge Si node flip chips that are now used in top-tier smartphones. Also, breakthrough active mold packaging work was conducted with LPKF Laser & Electronics AG using Henkel liquid encapsulants to achieve ultra-thin layers for laser-direct structuring.

## Process of the Year – NanoCleave™ IR Laser Release Technology – EV Group



EV Group is no stranger to the 3D InCites Awards Winner's Circle. In 2013, the company won the 3D Manufacturing Equipment Category for its [EV Group EVG850TB/DB XT](#) temporary bond/debond solution. In 2015, they took home the equipment award for the GEMINI®FB XT automated fusion wafer bonder, and again in 2020 for the SmartView® NT3 face-to-face bond aligner. This is the first year time EVG wins Process of the year for NanoCleave, a revolutionary layer release technology for silicon that enables ultra-thin layer stacking for front-end processing, including advanced logic, memory, and power device formation, as well as advanced packaging.

It is a fully front-end-compatible layer release technology featuring an IR laser that can pass through silicon. Coupled with the use of specially formulated inorganic layers, this technology enables an IR laser-initiated release of any ultra-thin film or layer from silicon carriers with nanometer precision.

NanoCleave enables silicon wafer carriers in advanced packaging processes such as FOWLP using mold/reconstituted wafers and interposers for 3D-SICs. Its compatibility with high-temp processes also enables completely novel process flows for 3D IC and 3D sequential integration – enabling hybrid and fusion bonding of ultra-thin layers on silicon carriers, revolutionizing 3D/heterogeneous integration and material transfer in next-gen scaled transistor designs.

## Start-Up of the Year Award – Saras Microdevices



While the name, Saras Micro Devices may seem new to you, the members of the executive team are very recognizable. Ramakanth Alapati, Executive Chairman, is also Chairman and CEO of [YES](#). Previous roles included leading technology strategy and roadmaps at [Amkor Technology](#), directing packaging product management and R&D at GlobalFoundries, and guiding the development and commercialization of double patterning & TSV technologies at Micron Technology. It's no surprise that he tapped into his network to bring on board such advanced packaging experts as CEO, Ron Huemoeller, formally of Amkor Technologies and longtime member of IMAPS. Additionally, CTO Jon Greenwood held leadership positions at Los Alamos National Laboratory, Plexus,

Globalfoundries, Micron, Amkor Technology, and Motorola; and CTO and Senior Fellow, Urmi Ray, Ph.D. brings 25 years of advanced packaging expertise from JCET, Qualcomm, and Lucent Technologies Bell Laboratories,

Saras Micro Devices is working to eliminate the power challenges of large HPC computing engines, AI, virtual reality, 5G and more with new panel-level power delivery technology. The company's heterogeneous integration solutions are said to deliver substantially improved HPC performance per Watt, reduced design cycle times, and reduced 3D footprint through seamless co-design — all at a cost advantage.

### **Help Us Celebrate the Winners of the 2023 3D InCites Awards in Person!**



Congratulations to all the winners of the 2023 3D InCites Awards. If you're attending the IMAPS Device Packaging Conference in Fountain Hills, AZ, next week, we hope you'll join us in celebrating these fine companies as we present the awards in person! The brief ceremony takes place at 9:55 am, Tuesday, March 14, just after the Keynote talks and before the coffee break. Please stick around and give these folks a round of applause. We'll also be sharing photos from the event on this year's Winner's Circle page, and featuring the winners in a podcast episode on the 3D InCites Podcast.

If you come, why not hang around for the rest of the festivities, including the second annual Hike for DEI. [Learn more here.](#)

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