



Research group

Principal Investigator | Prof. Chul-Ho Lee (이철호)

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2023-: Associate Prof. Dept. of ECE, Seoul Nat. Univ.

2014-2022: Assistant & Associate Prof.

KU-KIST & Dept. of IEE, Korea Univ.

2011-2013: Postdoc Fellow

Dept. of Physics, Columbia Univ.

2005-2011: Ph. D, Dept. of MSE, POSTECH

1999-2005: B.S, Dept. of MSE, POSTECH

- 차세대 한국과학기술한림원 (2022) • 청암 Science 펠로십, 물리학 (2015)
- 한국그래핀학회 신진학술상 (2019) • 학문후속세대 해외포스닥 펠로십 (2011)

Group Members | Research Prof. (1), Ph. D (9) M.S. (5)

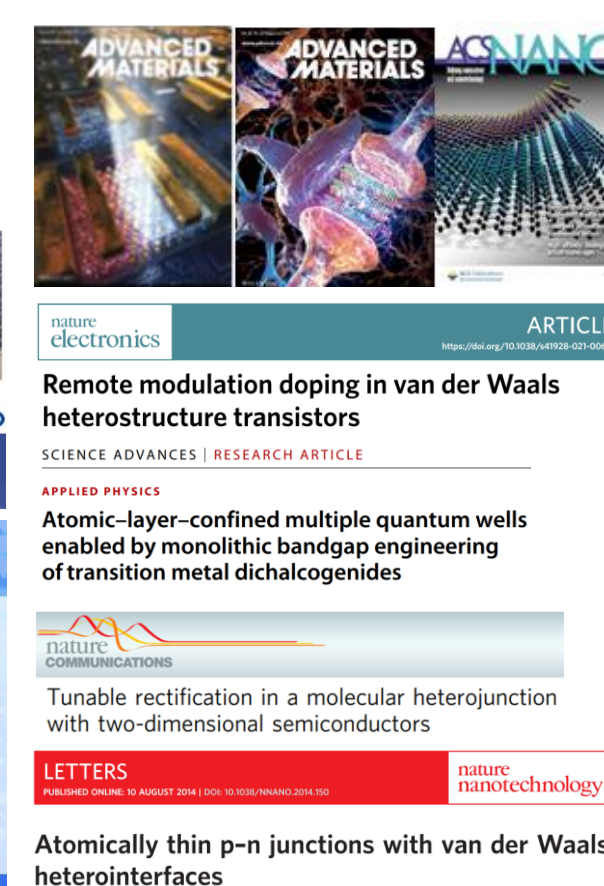


Research Achievements

◆ SCI(E) ~100 papers, Citation: ~11400, h-index: 41

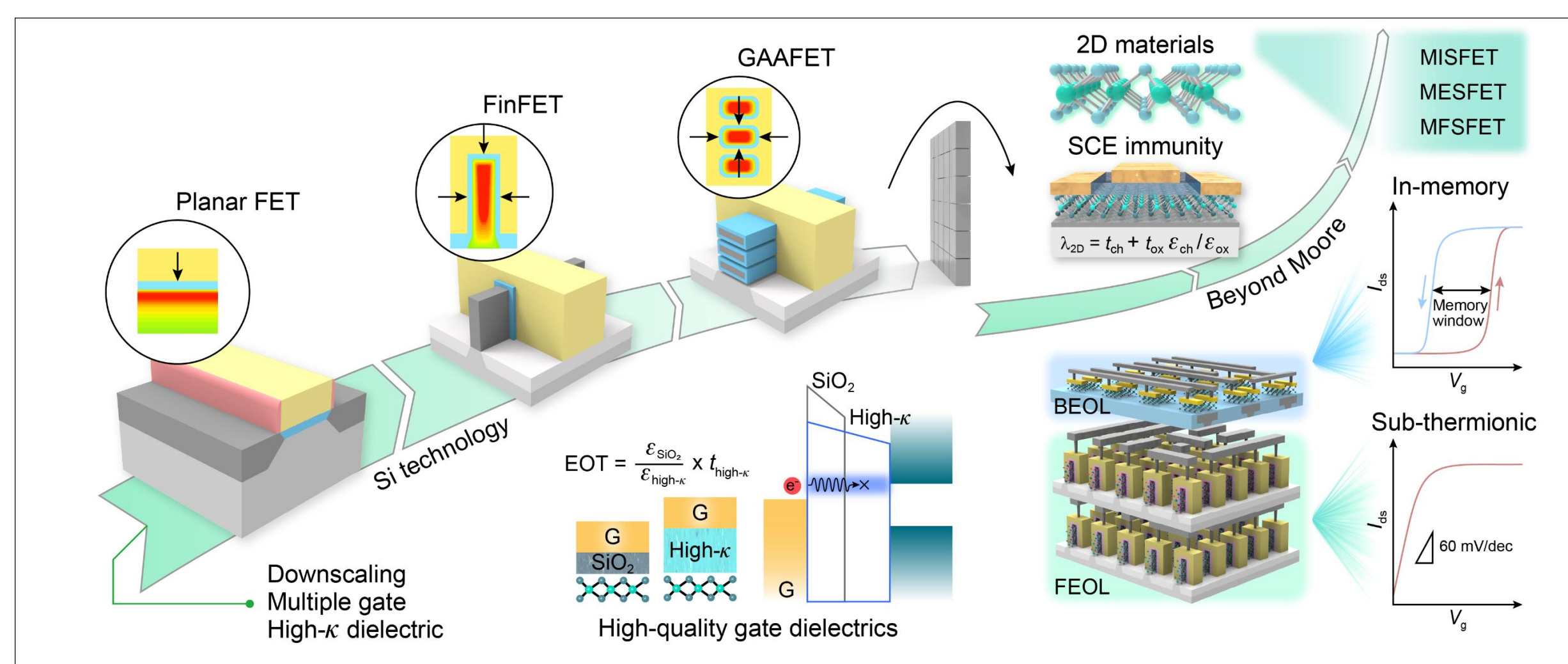
Representative Publications

- Adv. Mater. 35, 2211525 [2023]
- Adv. Mater. 34, 2108203 [2022]
- Nature Electron. 4, 664 [2021]
- Science Adv. 7, eabd7921 [2021]
- Adv. Mater. 32, 2002092 [2020]
- Nature Commun. 11, 1412 [2020]
- Nature Nanotech. 9, 676 [2014]
- Science 341, 157 [2013]
- Science 330, 655 [2010]



Research Background & Interests

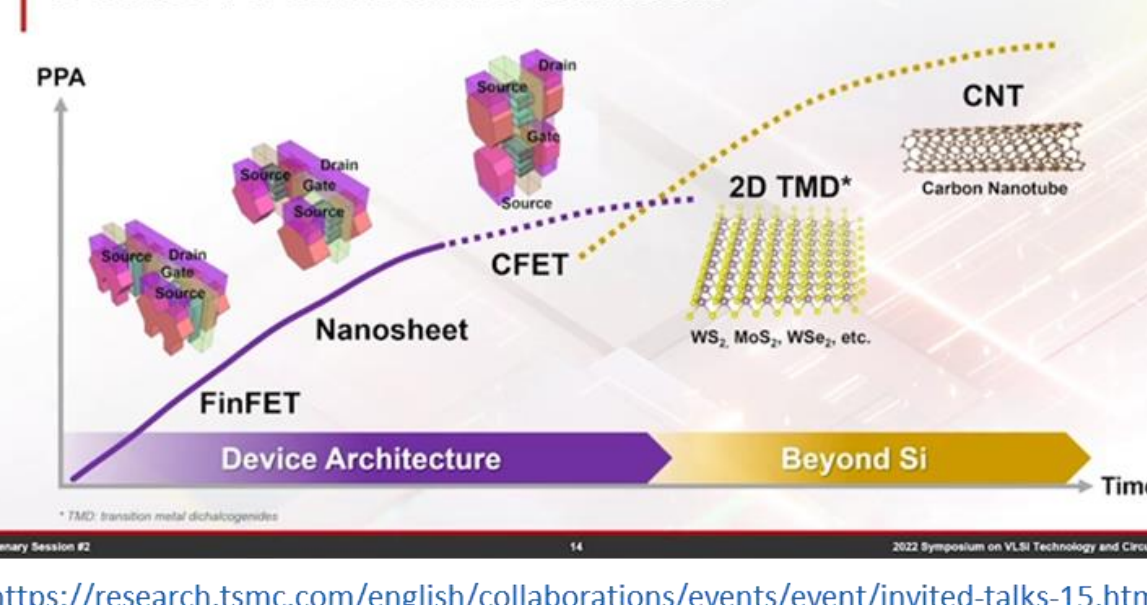
Our group aims to realize the Beyond-CMOS technologies based on emerging 2D semiconductors. The research activities focus on understanding the underlying principles of atomically-scaled nanodevices and investigating the fundamental physical properties of low-D electronic/optoelectronic systems.



2022 Symposium on VLSI Technology & Circuits
Plenary session

Dr. Y.J. Mii, Senior Vice President of R&D

Device Architecture Outlook



<https://research.tsmc.com/english/collaborations/events/event/invited-talks-15.html>

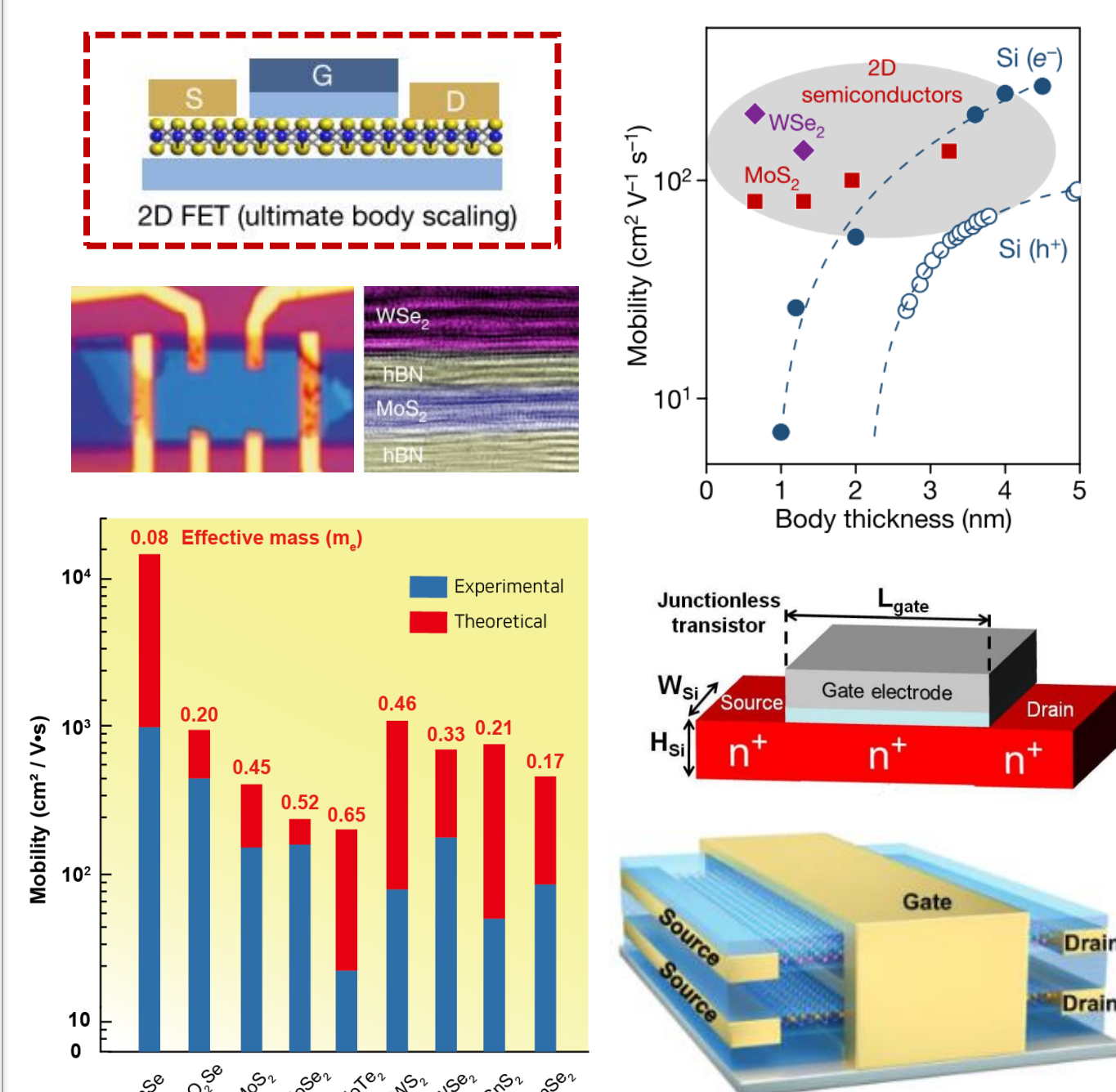


2022 IEEE International Electron Device Meeting
Plenary session

Intel Component Research Group

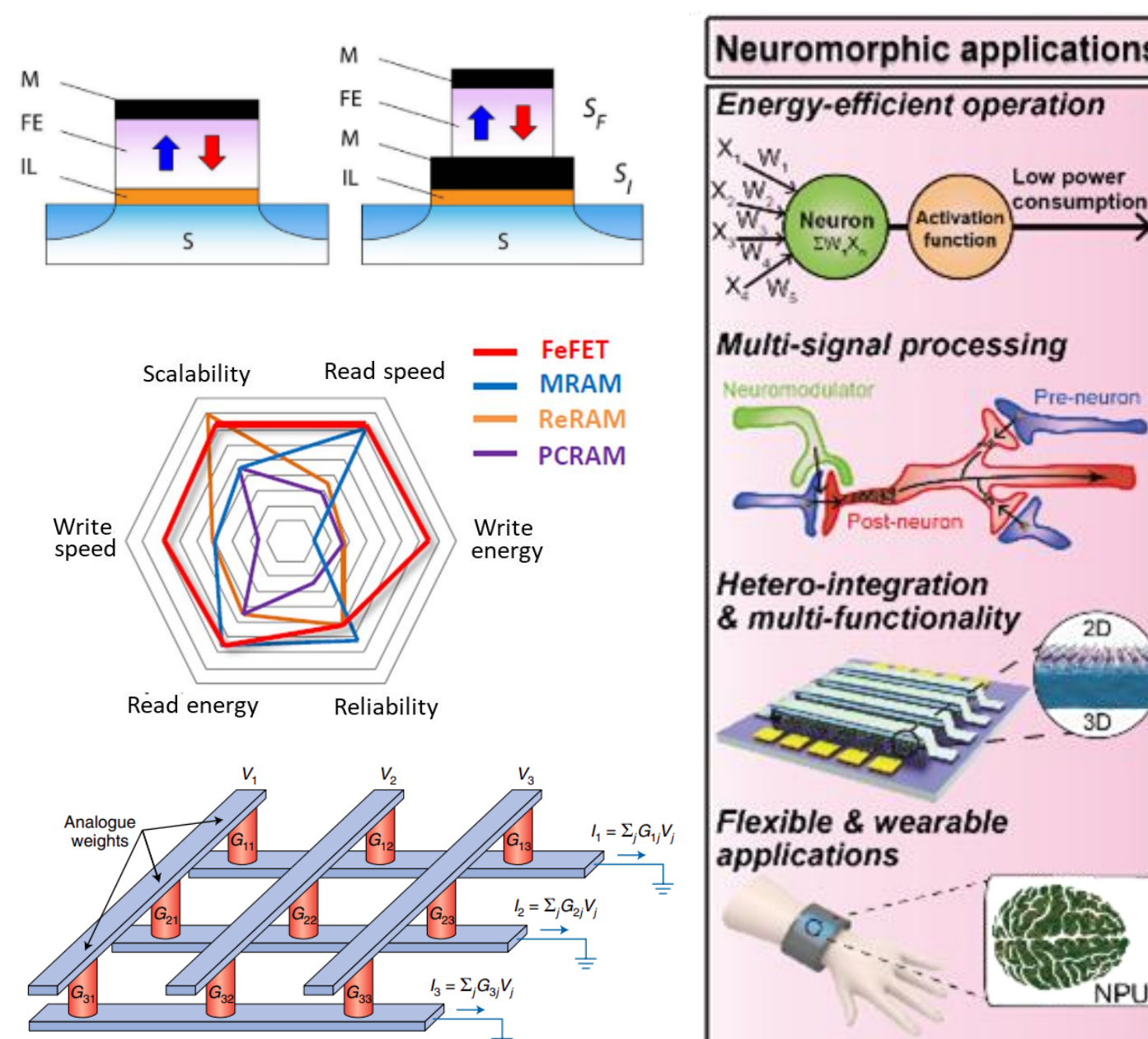
"Intel's innovations across three key areas include new 3D hybrid bonding packaging technology to enable seamless integration of chiplets; **super-thin, 2D materials** to fit more transistors onto a single chip; and new possibilities in energy efficiency and memory for higher-performing computing"

High-performance 2D Electronics for Beyond-CMOS



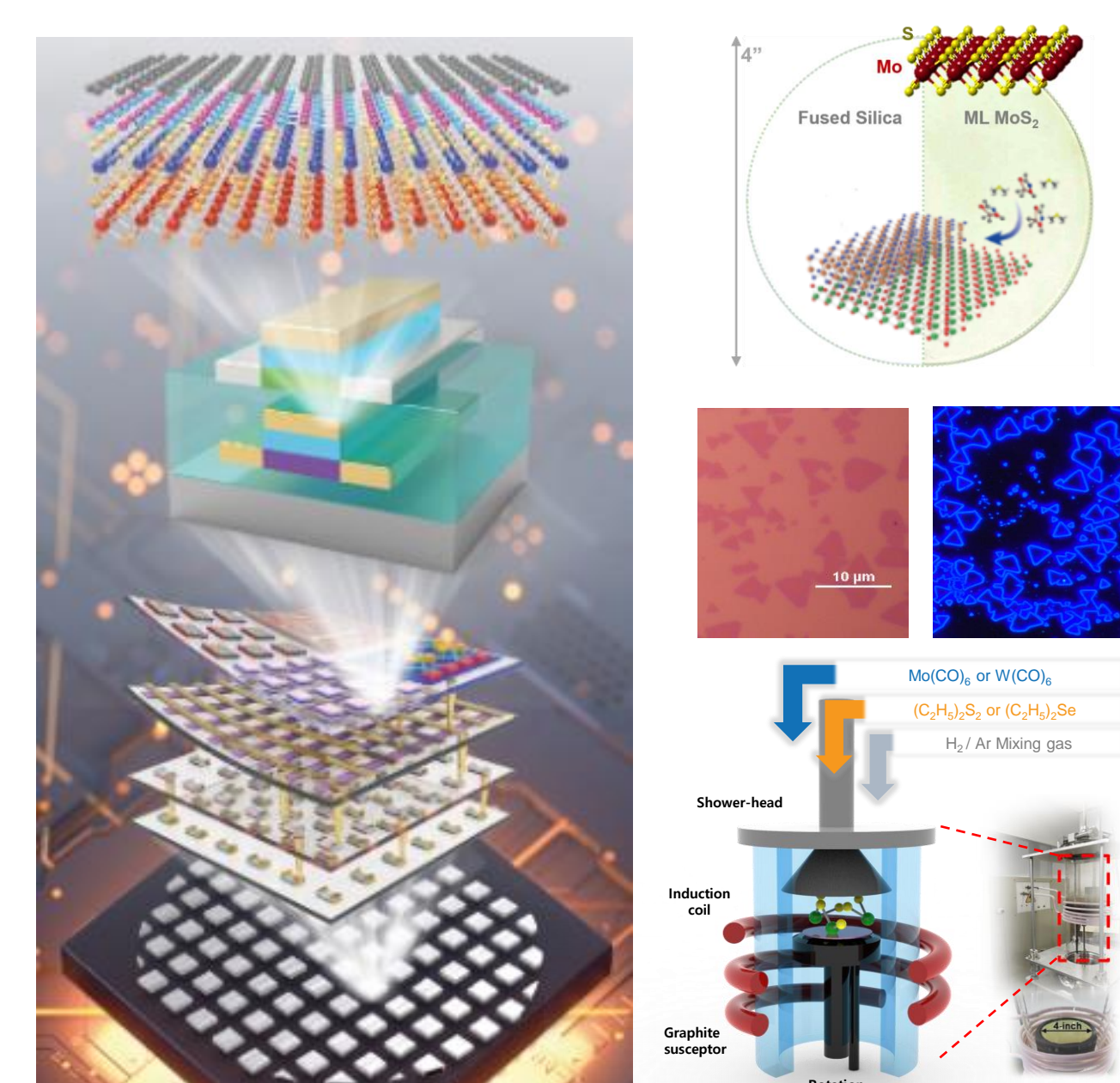
- High-performance 2D FETs
- Contact engineering of 2D FETs
- Interface band engineering of 2D heterostructure devices
- Photo-physics of ultrathin optoelectronic devices

Low-Power 2D Electronics for Non-von Neumann Computing



- Low-power devices based on 2D semiconductors
- Ferroelectric devices based on 2D/3D heterostructures for process-in-memory
- Neuromorphic electronics based on 2D semiconductors

Monolithic 3D Integration Processing & Devices



- Hetero-3D integration of 2D devices on CMOS
- Low-temperature processes of 2D semiconductor growth and device fabrication
- Flexible & transparent electronics (on plastic & glass)