Visiting education programs for industries that want to improve their employees' capabilities

## Lecturer and education contents

**Prof. Inho Nam** (Hanyang University, Korea)

- Seoul National University, Ph.D EE, Korea
- Samsung Electronics, DRAM PA project leader & Samsung Display OLED manufacturing tech. group director
- Achievement : Samsung Group Technology Award as 256M DRAM PA leader
- **Lecture contents**
  ① Structure and operation principle for DRAM
  ② Structural change of DRAM cell to overcome technical problem, 2D/3D integration process
  ③ Technical trend of DRAM

**Prof. Yunheub Song** (Hanyang University, Korea)

- Tohoku University, Ph.D EE, Japan
- Samsung Electronics, Memory division, vice president in Flash PA team
- Research : NVM (3D NAND flash, X-point array, etc), new memory and logic device
- **Lecture contents**
  ① Structure and operation principle for Flash memory
  ② Technical issue of 2D NAND flash, introduction of 3D NAND flash, 2D/3D integration process
  ③ Technical trend of 3D NAND flash memory

**Prof. Hongsik Jeong** (UNIST, Korea), ※inviting lecturer

- Yonsei University, Ph.D physics, Korea
- Samsung Electronics, Memory division, vice president in Emerging memory team
- Research : NVM (PRAM, X-point array, STT-MRAM etc), new memory device and system
- **Lecture contents**
  ① Structure and operation principle for Emerging memory
  ② Introduction of PRAM, X-point array , MRAM, STT-MRAM, 2D/3D integration process
  ③ Technical trend of Emerging memory

**Prof. Bongseok Kim** (Hanyang University, Korea)

- Hanyang University, Master ME, Korea
- Samsung Electronics, System LSI division, vice president in Technology Development team
- Research : NVM (PRAM, X-point array, STT-MRAM etc), new memory device and system
- **Lecture contents**
  ① Product trend of Logic product
  ② Structure of logic device and its requirement
  ③ Technical trend and issue of logic, 2D/3D integration process
  ③ Technical trend of future logic technology

PeDiSem

Illustration & animation based

**"Semiconductor Integration Tech. _ In-Depth Academy"**

for understanding of

# Memory & Logic

- **Goal** _ To provide an understanding for integration process of DRAM, NAND Flash Memory, Emerging Memory, and Logic device by showing illustration & animation
- **Subject** _ Integration technology of DRAM, NAND Flash Memory, Emerging Memory, and Logic
- **Date** _ Decision with customer
- **Location** _ Decision with customer
- **Trainee** _ Institute of semiconductor manufacturing, research institute of university students and research, industry engineer in semiconductor equipment, materials and parts
- **Host** _ PeDiSem Co. (since 2019)

## Contents of the integration technology program

❶ Introduction of DRAM, NAND Flash, Emerging Memory, Logic
❷ Device structure and operation of DRAM, NAND Flash, Emerging Memory, Logic
❸ Integration technology of DRAM, NAND Flash, Emerging Memory, Logic
❹ Technology trend of DRAM, NAND Flash, Emerging Memory, Logic
❺ Future technology, challenges of DRAM, NAND Flash, Emerging Memory, Logic

## Courses of the integration technology program

| Course type | Subject | Times | Remarks |
|---|---|---|---|
| **A** Semiconductor latest technology summary | DRAM | 2hr | basics ~ new tech. trend |
| | NAND Flash Memory | 2hr | |
| | Logic | 2hr | |
| | total | 6hr (1day) | |
| **B** semiconductor Integration : an in-depth understanding (current tech.) | DRAM | 6hr (1day) | basics ~ In-depth, new tech. trend (2D Animation) |
| | NAND Flash Memory | 6hr (1day) | |
| | Logic | 6hr (1day) | |
| | total | 18hr (3days) | |
| **C** semiconductor Integration : an in-depth understanding (future tech.) | DRAM | 8hr (1day) | basics ~ In-depth, new tech. trend (2D, 3D Animation) |
| | NAND Flash Memory | 8hr (1day) | |
| | Emerging Memory | 8hr (1day) | |
| | Logic | 8hr (1day) | |
| | total | 32hr (4days) | |

※The above program may be subject to some changes in circumstances.
※Lecture time standard: 50 minute presentation / 10 minute break

## Training program characteristics

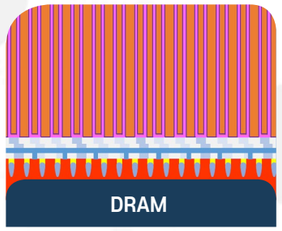
### | Lecturer expertise

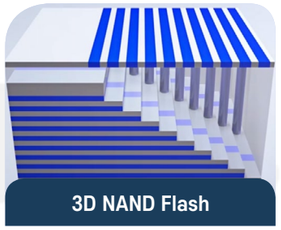
• Direct explanation from the experts who led the study (DRAM, Flash Memory, Emerging Memory and Logic Products) from Samsung Electronics
- Prof. Inho Nam (Hanyang University, Korea) : DRAM expert, Samsung Group Technology Awards Winner
- Prof. Yunheub Song (Hanyang University, Korea) : Flash Memory expert, previous vice-president Samsung Electronics
- Prof. Hongsik Jeong (UNIST, Korea) : PRAM, X-point expert, previous vice-president, Samsung Electronics ※inviting lecturer
- Prof. Bongseok Kim (Hanyang University, Korea) : Advanced Logic Tech. expert, previous vice-president, Samsung Electronics

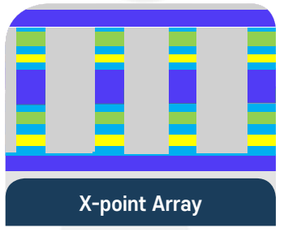
### | Educational differentiation

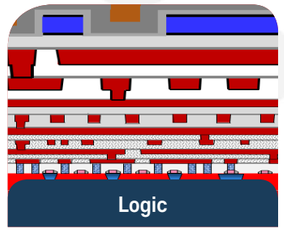
To provide an understanding of the integration process of the key memory and logic products

❶ Illustration and animation for understanding the operating principles, structure, and integrated processes


DRAM

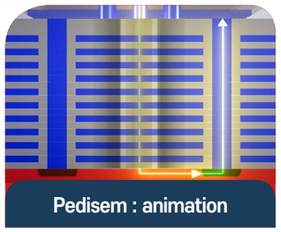

3D NAND Flash


X-point Array


Logic

❷ Maximize education effectiveness : Off-line enterprise-customized expert training, pre-discussion with customers for contents


Conventional


Pedisem : animation


Pedisem(In progress): VR, AR

- Off-line education : from 2020 Feb.
- Streaming service for 2D/3D integration, guide book : from 2020 Sept.

❸ Introduction on next generation of DRAM, NAND Flash Memory, Emerging Memory and Logic

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## Training program costs

**Contact ~ PeDiSem training office (Homepage : www.pedisem.com)**