TM_ver.1.5(lite)_20220720

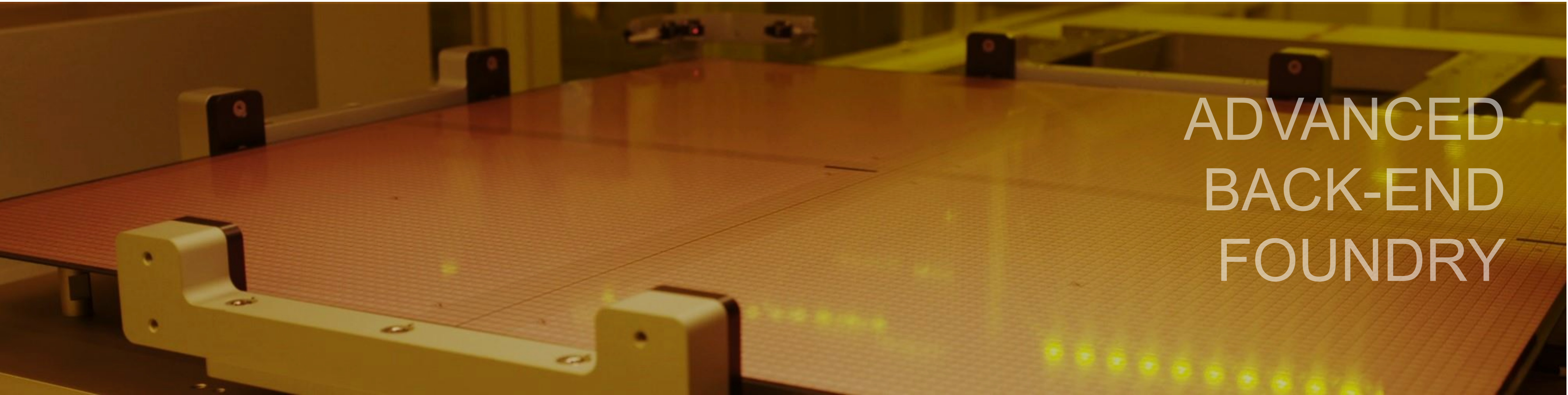
nepes

2022 INTRODUCTION

nepes

Semiconductor | Artificial Intelligence | IT Materials

CONTENTS



ADVANCED
BACK-END
FOUNDRY

CORPORATE BRANDING

nepes’ 4D management began at the very moment when the company name was chosen

From Hebrew

נֶפֶשׁ(nephesh)

Eternal Life / Dynamic

Longevity Corporation

4D(4^{th} dimension) management?

The management that generate creation/innovation/ pioneering and fun/satisfaction/happiness

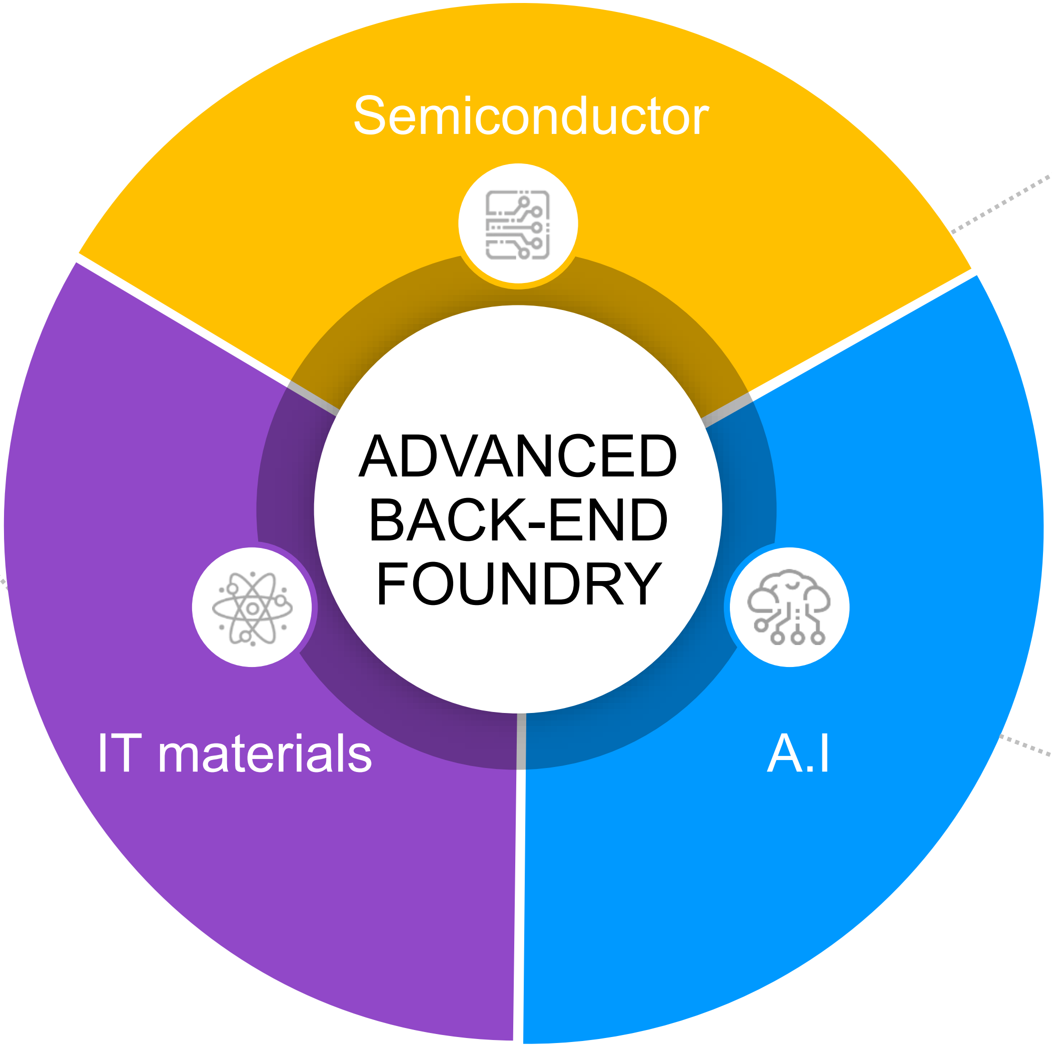
Corporate Identity

Trademark

Name of company	nepes
Date of establishment	1990.12
Date of Listing	1999.12(KOSDAQ 033640)
CEO	Byung-Koo Lee(李柄九)
Overseas corporation	CN, US, PHL, IDN

BUSINESS PORTFOLIO

Advanced Back-end Foundry company nepes leads the future of system semiconductors



01. Semiconductor

- FOPLP/FOWLP
- WLP, Bumping
- System in PKG
- Test

02. Artificial Intelligence

- A.I Solution for Vision Inspection
- A.I Solution for Predictive Maintenance
- A.I Solution for A.I Chip

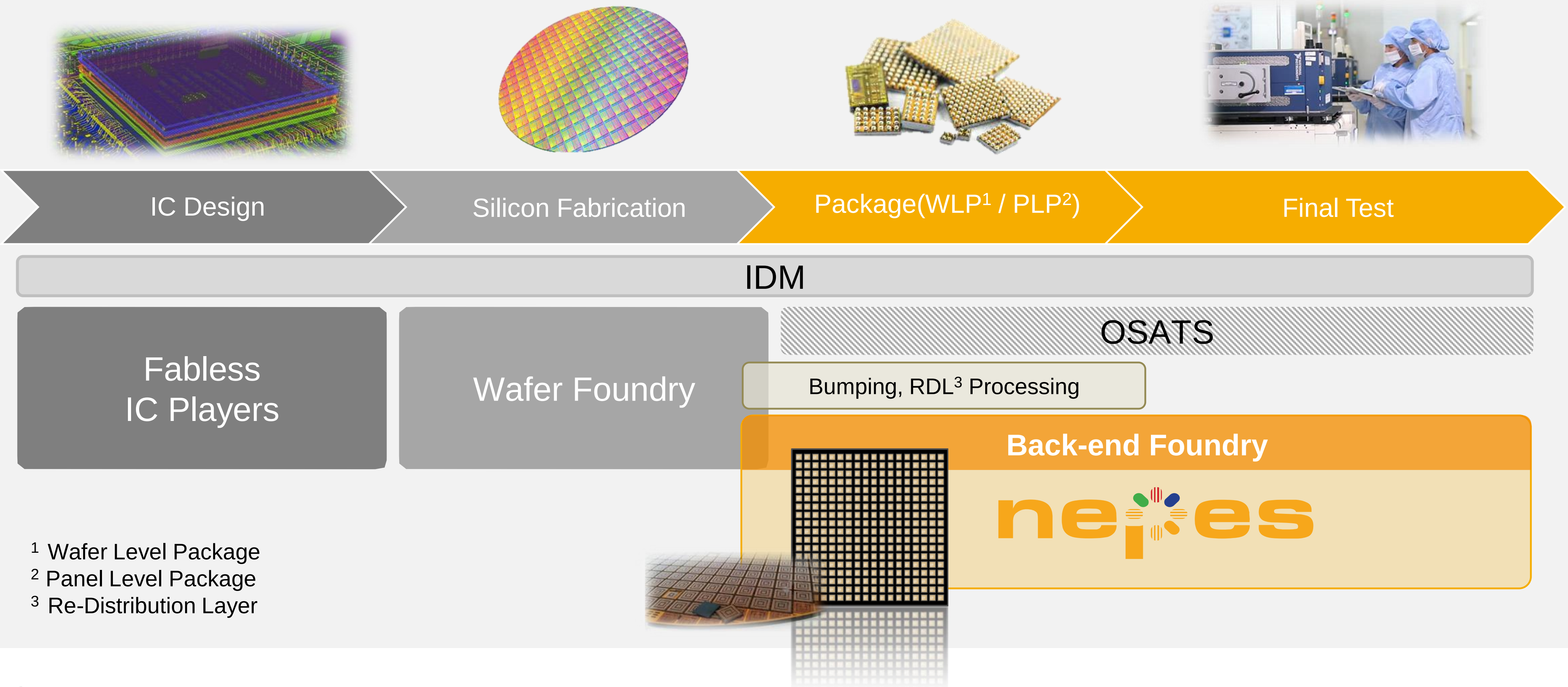
03. IT materials

- PR, PSPI etc
- Functional Chemicals
- Process Chemicals
- Lead Tab(ESS/EV)
- Smart Film

CORE TECHNOLOGY | 01. Semiconductor

nepes’ advanced semiconductor technologies including FOPLP and nSiP changes global supply chain

Semiconductor Supply Chain



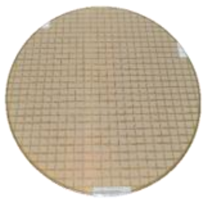
[1] Wafer Level Package
[2] Panel Level Package
[3] Re-Distribution Layer

CORE TECHNOLOGY

01. Semiconductor

nepes' End-fab technology enables high-end semiconductor to be advanced and smaller

Fan in WLP



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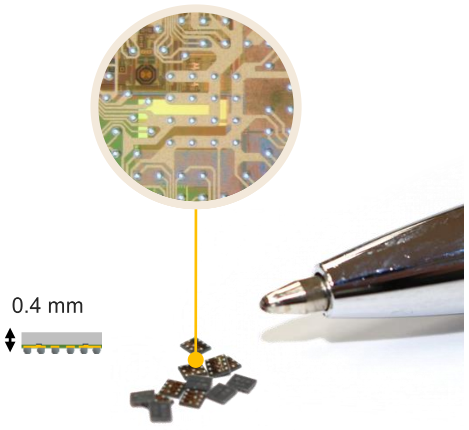
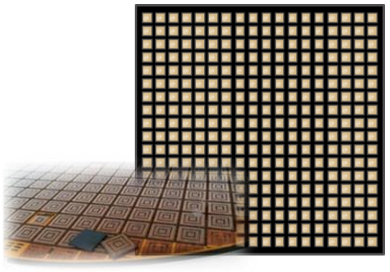
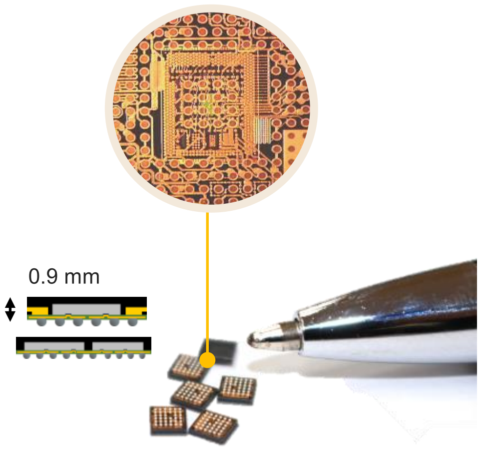


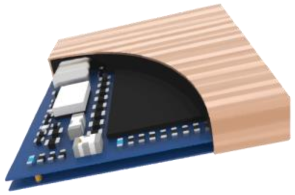
Fan out WLP/PLP



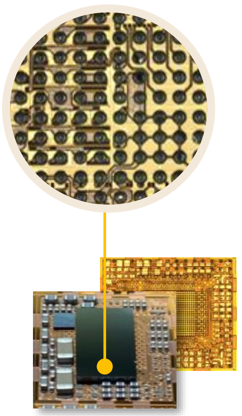
300mm rd. / 600mm sq.



nSiP



Small & Thin SiP(End fab+PLP)



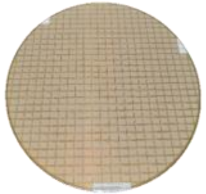
Applications

CORE TECHNOLOGY | 01. Semiconductor ① WLP

nepes

nepes’ End-fab technology enables high-end semiconductor to be advanced and smaller

Fan in WLP | Fan out WLP/PLP | nSiP



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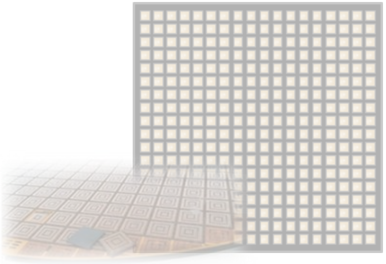

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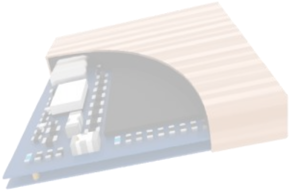
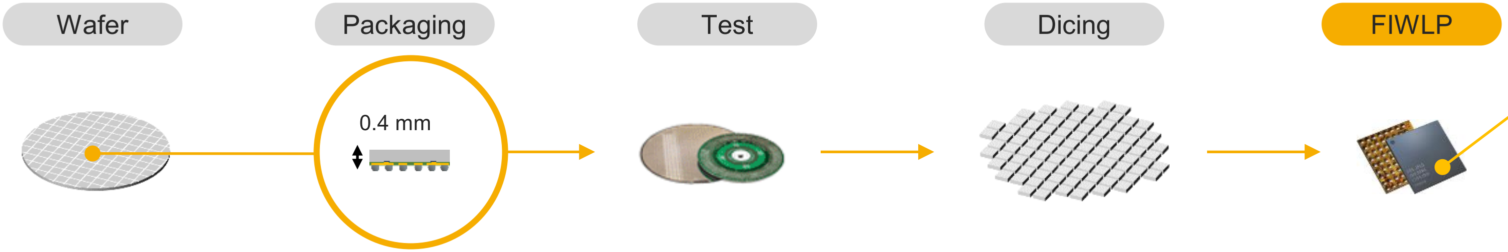


Small & Thin SiP(End fab+PLP)

▶ FIWLP(Fan in Wafer Level PKG) Process



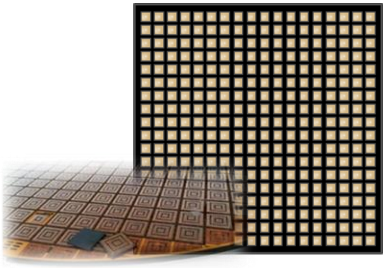
Applications

CORE TECHNOLOGY | 01. Semiconductor ② FOWLP/PLP

nepes' End-fab technology enables high-end semiconductor to be advanced and smaller

Fan in WLP	Fan out WLP/PLP	nSiP

200mm / 300mm



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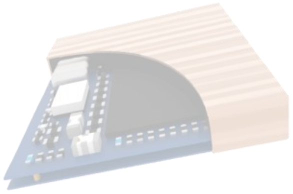
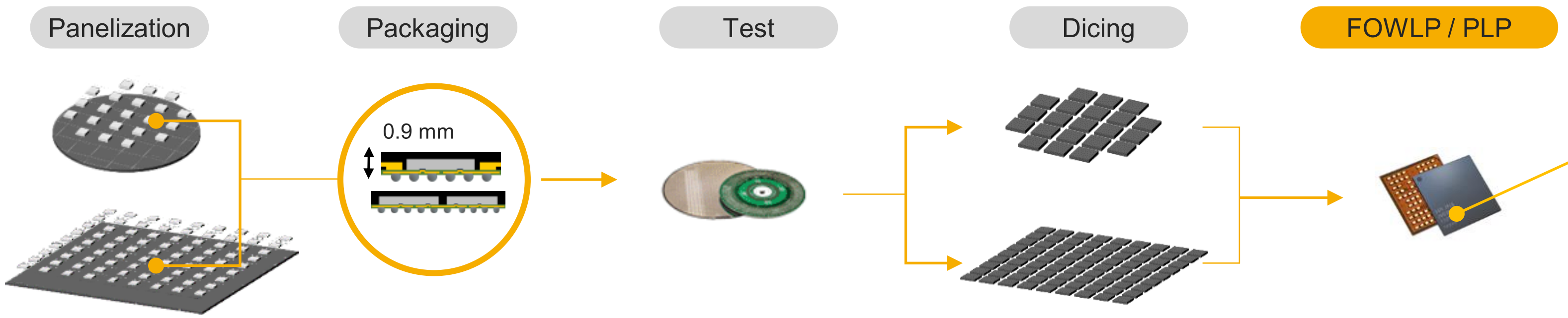


Small & Thin SiP(End fab+PLP)

▶ FOPLP(Fan out Panel Level PKG) Process



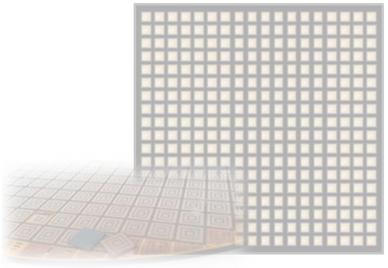
Applications

CORE TECHNOLOGY | 01. Semiconductor ③ nSiP

nepes' End-fab technology enables high-end semiconductor to be advanced and smaller

Fan in WLP	Fan out WLP/PLP	nSiP

200mm / 300mm



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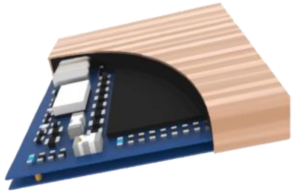
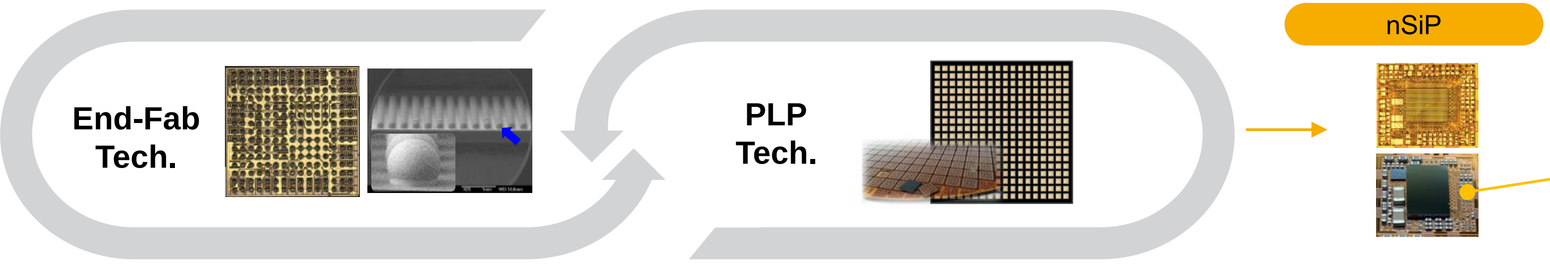


Small & Thin SiP(End fab+PLP)

▶ What is nSiP(System in PKG)?



End-Fab Tech.

PLP Tech.

nSiP

Applications

CORE TECHNOLOGY | 02. Artificial Intelligence

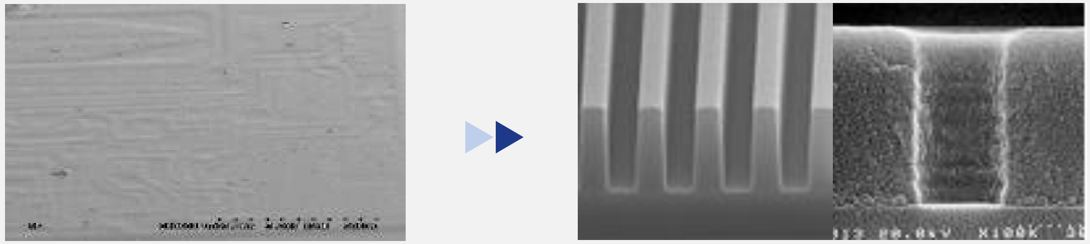
Service & Products

- A.I Solution for Vision Inspection
- A.I Solution for Predictive Maintenance
- A.I Solution for A.I chip

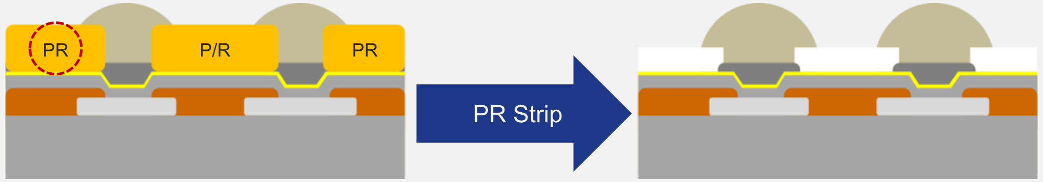
CORE TECHNOLOGY | 03. IT Materials ① Chemicals

Process chemicals

- PR
- Developer
- Stripper
- Etchant
- HSN

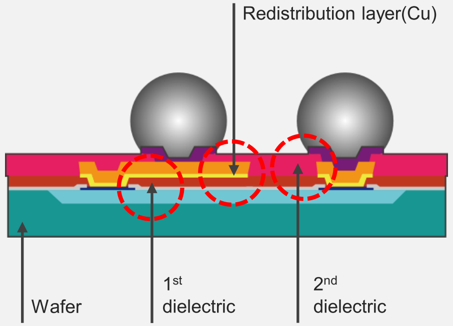

Untreated

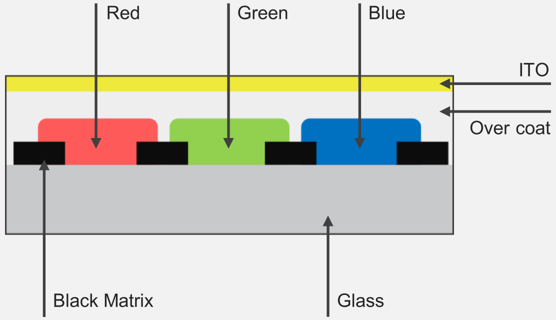
After treatment



Functional chemicals

- ILD/PSPI
- Cu Plating
- Color paste



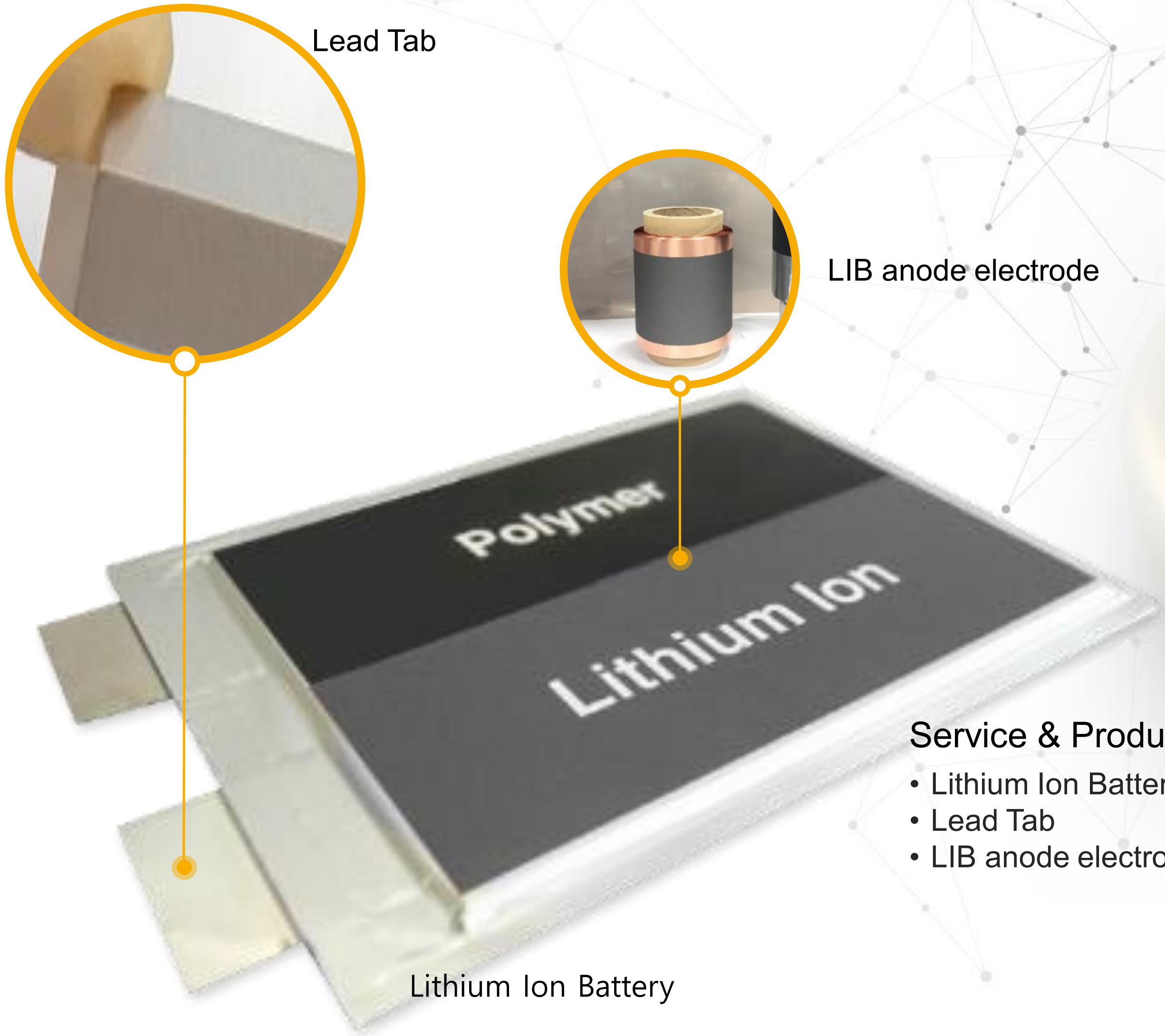


Applications

Semiconductor
Display(LCD, OLED)
Solar Cell

CORE TECHNOLOGY

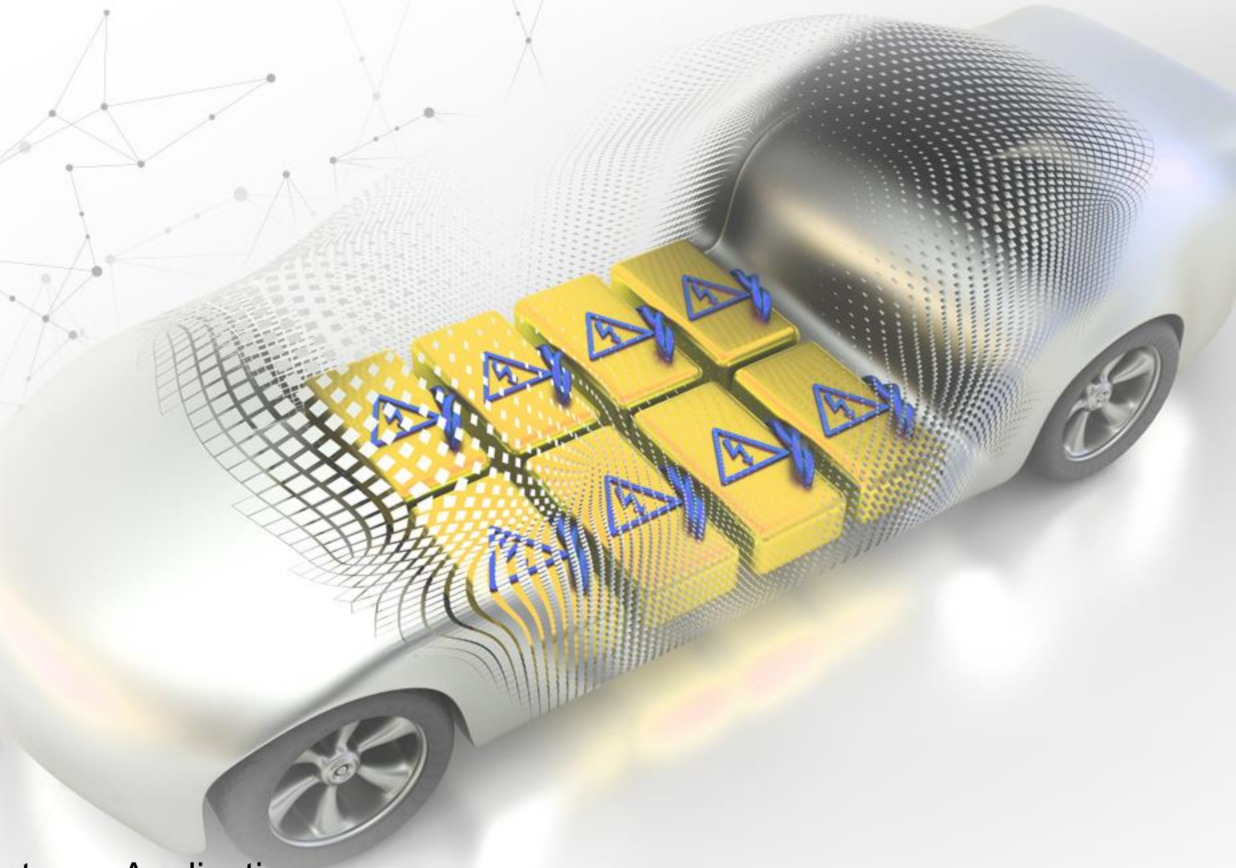
03. IT Materials ② Lead Tab



Lead Tab

LIB anode electrode

Lithium Ion Battery



Service & Products

- Lithium Ion Battery
- Lead Tab
- LIB anode electrode

Applications

CORE TECHNOLOGY

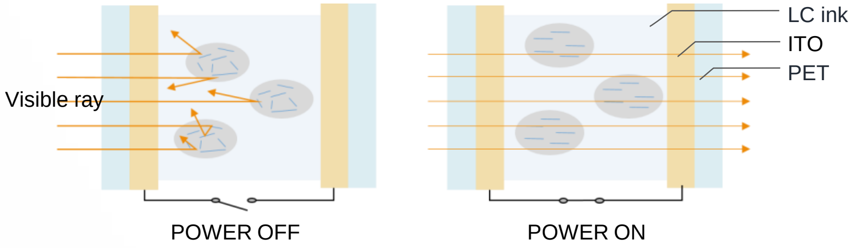
03. IT Materials ③ Smart Film

PDLC(Super LC)

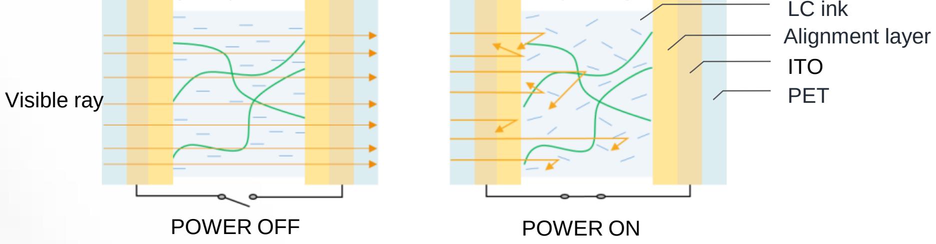
Signage application case

Super LC Structure and Principles

- PDLC (Polymer Dispersed Liquid Crystal)



- PNLC (Polymer Network Liquid Crystal)

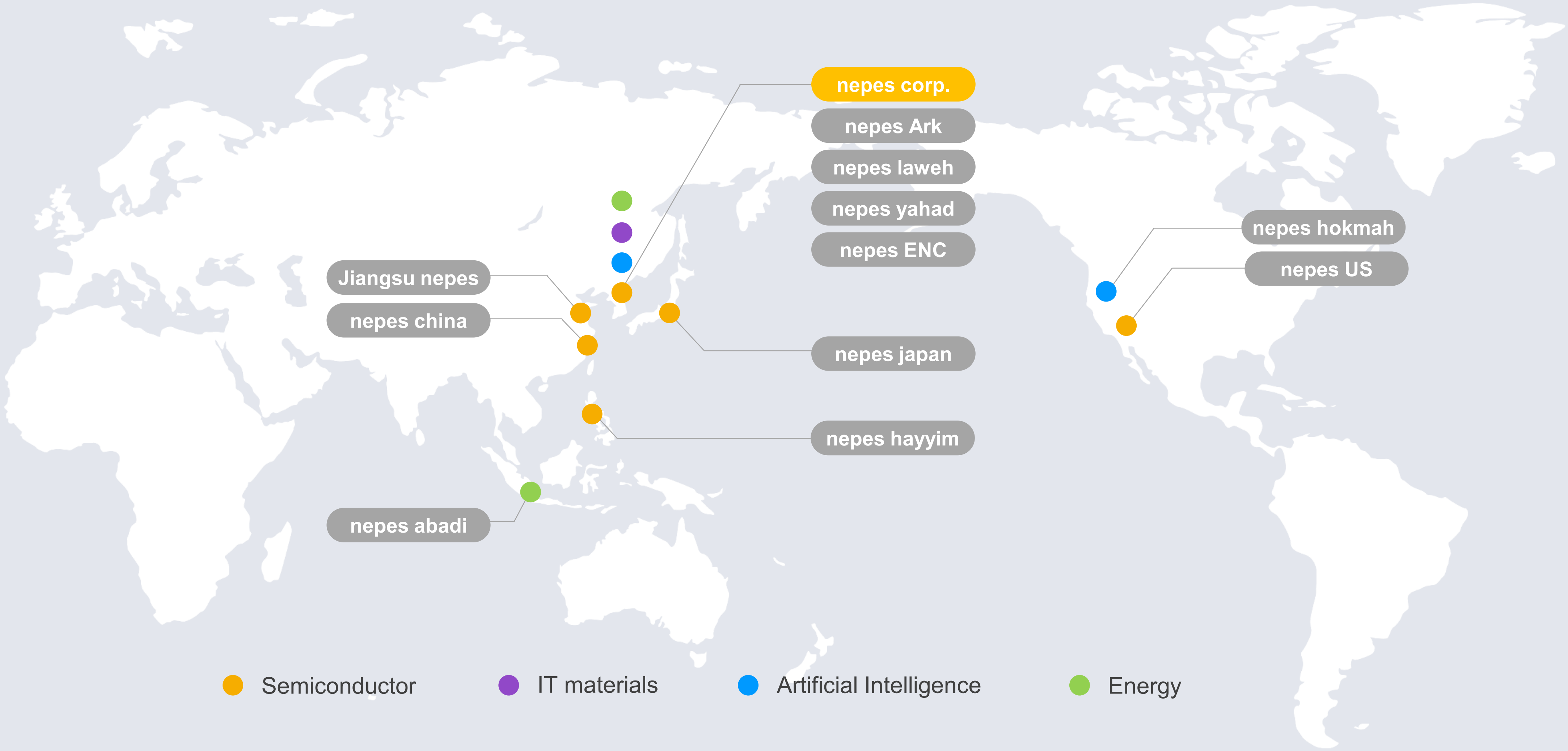


Service & Products

- Building & Interior
- Signage & Electronics

GLOBAL NEPES

We will serve the earth with our technology and products



CORPORATE CULTURE

nepes continues to grow by creating performances through the development of unique corporate culture in nepes' own ways

superstar

Sharing

Global

NO.1

corporate culture

Thanks & song

i-training

3.3.7

LIFE

nepes
nepes corporation

THANK YOU

nepes corporation

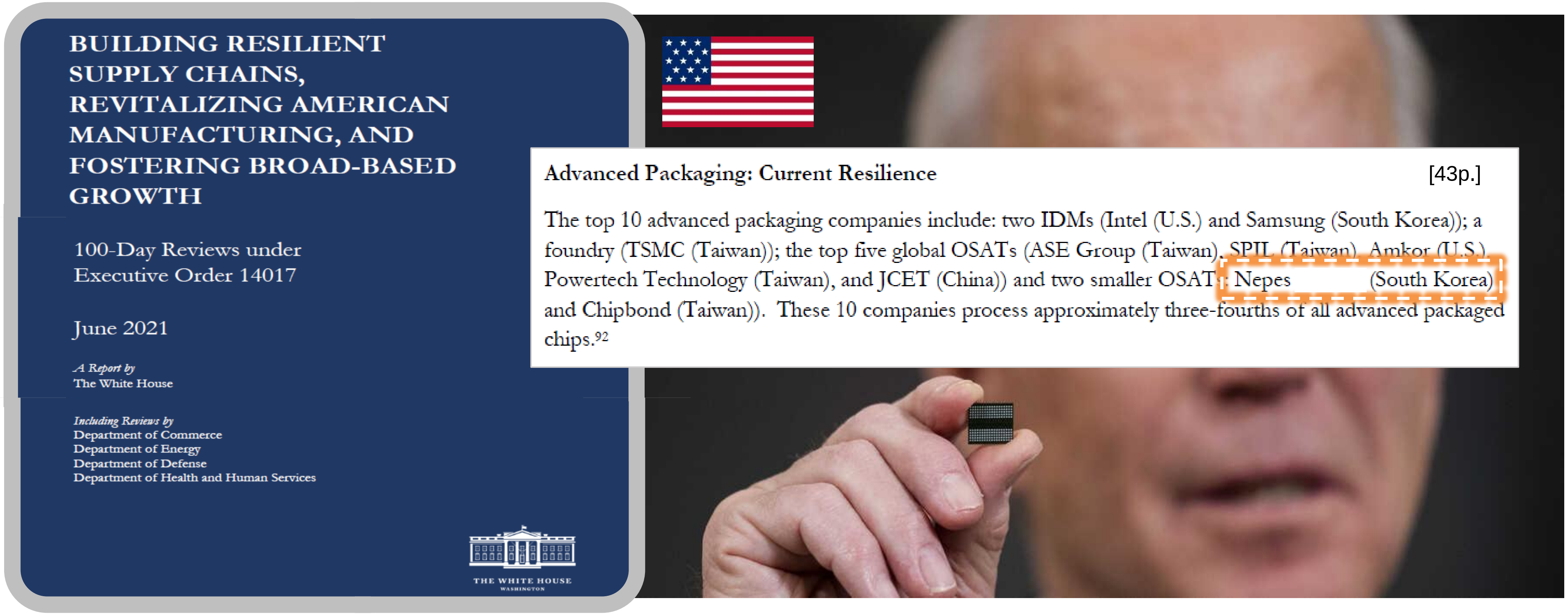
2415, Nambusunhwan-ro, Seocho-gu, Seoul, Korea
Tel : 02-3470-2700
Fax : 02-3470-2708
URL: www.nepes.co.kr

To Him who alone does great wonders, His love endures forever. Psalm 136:4
* A dandelion means ‘Gratitude’ in the language of flowers

RECOGNITIONS 1 | White House report quotation

President Biden ordered an executive order directing an investigation into US semiconductor supply chain, and the White House released a review report (June, ‘21).

- It contained the proposal of strengthening the domestic semiconductor manufacturing ecosystem by highlighting advance packaging necessary for important national security other than commercial use, and this shed light on nepes among the global top10 companies.



BUILDING RESILIENT SUPPLY CHAINS, REVITALIZING AMERICAN MANUFACTURING, AND FOSTERING BROAD-BASED GROWTH

100-Day Reviews under
Executive Order 14017

June 2021

A Report by
The White House

Including Reviews by
Department of Commerce
Department of Energy
Department of Defense
Department of Health and Human Services

THE WHITE HOUSE
WASHINGTON

Advanced Packaging: Current Resilience [43p.]

The top 10 advanced packaging companies include: two IDMs (Intel (U.S.) and Samsung (South Korea)); a foundry (TSMC (Taiwan)); the top five global OSATs (ASE Group (Taiwan), SPIL (Taiwan), Amkor (U.S.), Powertech Technology (Taiwan), and JCET (China)) and two smaller OSAT: Nepes (South Korea) and Chipbond (Taiwan)). These 10 companies process approximately three-fourths of all advanced packaged chips.92

[Source: The White House, ‘Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-based Growth’, Jun ’21]

RECOGNITIONS 2 | Joining ASIC membership

American Semiconductor Innovation Coalition (ASIC) membership is by invitation-only and IBM has asked nepes to join the Coalition in May ‘22

- IBM and other coalition members feel that nepes can bring a tremendous value to the coalition with its expertise in the advanced packaging such as wafer level processing and fan-out technologies

The News with Shepard Smith @thenewsoncnbc · Apr 23

Congress will be back in session from a recess next week. A top item on the agenda is a bill that would dedicate $52B to making more semiconductors in America. U.S. scientists invented the tiny computer chips, but most of them are now made in Asia. @ylanmui reports from New York.

www.asicoalition.org

Coalition Members Include

APPLIED MATERIALS
ALBANY NANOTECH COMPLEX
ANALOG DEVICES AHEAD OF WHAT'S POSSIBLE™
IBM
nepes corporation
Microsoft
MIT
MARVELL
SIEMENS

RECOGNITIONS 3 | International case study presentation

Nepes' unique management philosophy has been recognized as a creative competitiveness that drives continuous growth of the organization and has been introduced as an excellent management case at various international academic conferences.

2022 GLOBAL CONFERENCE ON IHRM

SAVE THE DATE! MAY 19–21, 2022

FIFTH GLOBAL CONFERENCE ON INTERNATIONAL HUMAN RESOURCE MANAGEMENT

Founder, CEO & Chairman of Nepe
Byung-Koo Lee

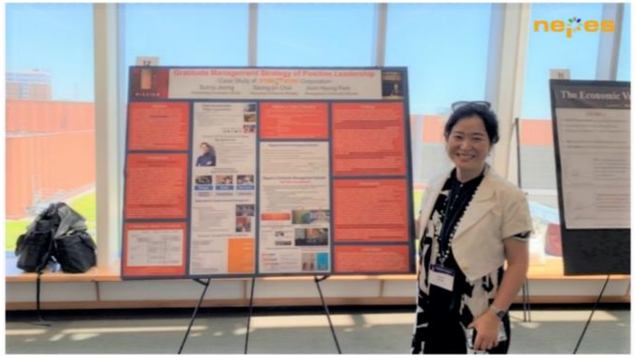
- An entrepreneur full of curiosity and passion
- Christian
  - Active group leader at Sarang Community Church in Korea
- Adjunct Prof at Ewha Women's University
- Winner of the Silver Tower Order of Industrial Service Merit in Venture Korea (2006)
- Served as the Director of the Production Technology Center, LG Semiconductor
- Honorary Citizen of the City of Toledo, Ohio, USA
- Honorary Citizen of Yixing, Jiangsu Province, China
- Book Publication
  - "Management is Relationship: Gratitude Management"
  - "Success Attitude"
  - "An Attitude of SUCCESS"

Globalization of Gratitude Management Strategy by Dr. Jeong & Dr. Kim 14

CIHRS
Center for International Human Resource Studies

10TH BIENNIAL
POS RESEARCH CONFERENCE
Illuminating Research for a Positive Future

JUNE 23-24, 2022
CENTER FOR POSITIVE ORGANIZATIONS
ROSS SCHOOL OF BUSINESS
UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN, USA



Professor Sunny Jeong (Wittenberg University) presented the case of nepes corporation.

Presented by:
MICHIGAN ROSS
CENTER FOR POSITIVE ORGANIZATIONS

May 20, 2022 @St.John's Univ.
Global Conference on International HR Management

June 22-23, 2022 @ Michigan Univ.
Global Conference on Positive Organization

APPENDIX 1 | Core Technology (Semiconductor)

nepes

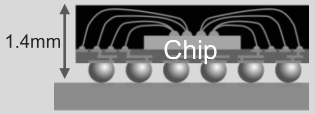
Market Trend

Smaller form factor
(Based on Wafer-Level Platform)

Highly integrated Wafer-Level System in Package

Tech. Roadmap

Conventional PKG

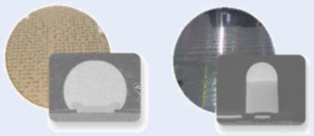


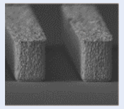
QFP

QFN

FCBGA

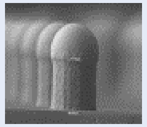
Bumping





Gold

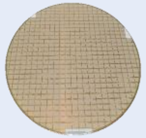
Solder



Etc(Cu Pillar, CNA bumping)

WLP

8”WLP

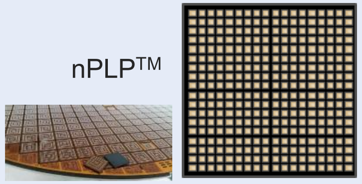


12”WLP

0.4mm

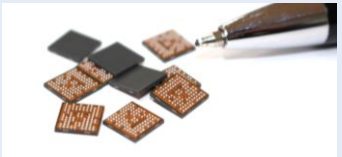
Fan-out WLP/PLP

nPLP^{TM}



600x600mm

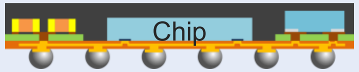
0.9mm



System in PKG

Multi-Chip Packaging

System in packaging



One Package Module

- AP, PMIC
- Flash Memory
- Neuromorphic

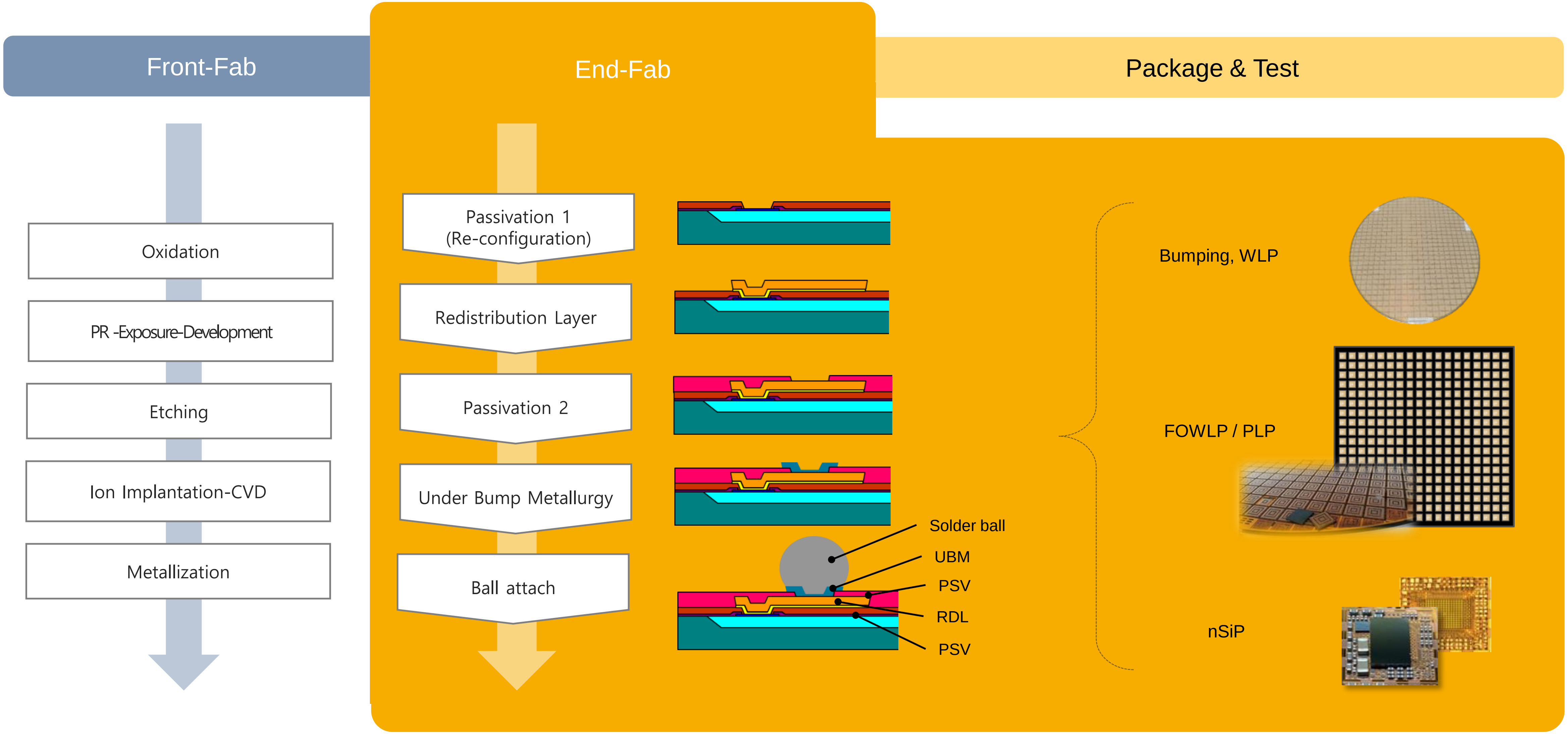
Position

nepes Back-end Foundry
(Bump, WLP, FOWLP, FOPLP, nSiP, TEST)

Other OSAT
Conventional wire bonding packaging & Typical WLP technology

APPENDIX 2 | What is End-fab?

End-fab refers to Passivation, RDL, and Bump processes after Front-Fab



Front-Fab

- Oxidation
- PR -Exposure-Development
- Etching
- Ion Implantation-CVD
- Metallization

End-Fab

- Passivation 1 (Re-configuration)
- Redistribution Layer
- Passivation 2
- Under Bump Metallurgy
- Ball attach

Package & Test

- Bumping, WLP
- FOWLP / PLP
- nSiP

APPENDIX 3 What is FOPLP?

- nepes sets new standards for FOPLP with the world's largest panel size
- nepes has created a unique FOPLP technology based on FOWLP, internal materials (chemicals) development, and End-fab