

Research on Cutting-edge Organic and Inorganic Hybrid Materials and Membranes

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Descriptions of Research Topics

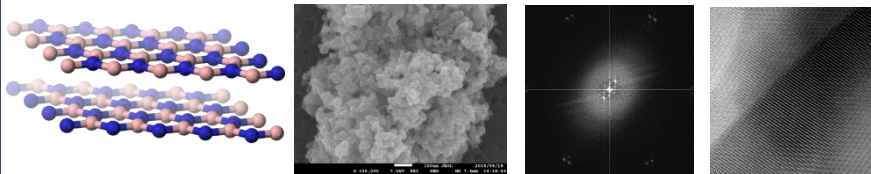
- Development of organic and Inorganic materials and hybrid membranes for industry
- Development of organic solvent resistant membranes and those application
- Characterization of hybrid materials and membranes
- Supporting research for startup and venture company

Applications:

- Waste water treatment, organic matter treatment
- Separation process for pharmaceutical, petro-chemical, fine chemistry, and food industry
- Automotive industry

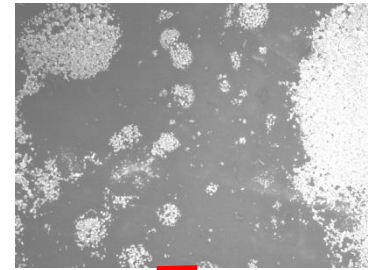
Descriptions of Research Technology

Fudamental Research Inorganic materials

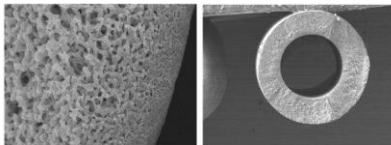


Material	a-BN	h-BN	c-BN	w-BN	graphite	diamond
Density (g/cm ³)	2.28	~2.1	3.45	3.49	~2.1	3.515
Mohs hardness		1-2	9.5-10	~10 ³	1-2	10
Knoop hardness (GPa)	10		45	34		100
Bulk modulus (GPa)	100	36.5	400	400	34	440
Bandgap (eV)	5.05	5.2	6.4	4.5-5.5	0	5.5

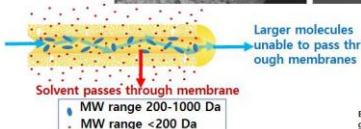
Fudamental Research Organic materials



Co-work and Supporting research for startup

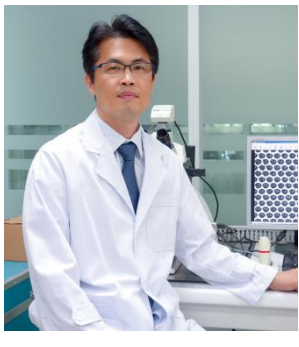


주식회사 멤브레어
MEMBRARE



Research Fields 1 Material·Nano 2 Polymer

Keywords Waste water treatment, Membrane, Hybrid material, Organic solvent resistant membrane



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Introduction of Gyeongbuk Hybrid Technology Institute

- As the center for the mechanical and automotive components cluster in the Gyeongbuk, Gyeongbuk Hybrid Technology Institute provides the optimal infrastructure for local companies.

Address : 36 Goiyeon-dong, Yeongcheon, Gyeongbuk 770-170, KOREA

Purpose : Research institute

Building scale : 1st Basement / 3rd Floor / Test production building

Building area : 2,622.47m²

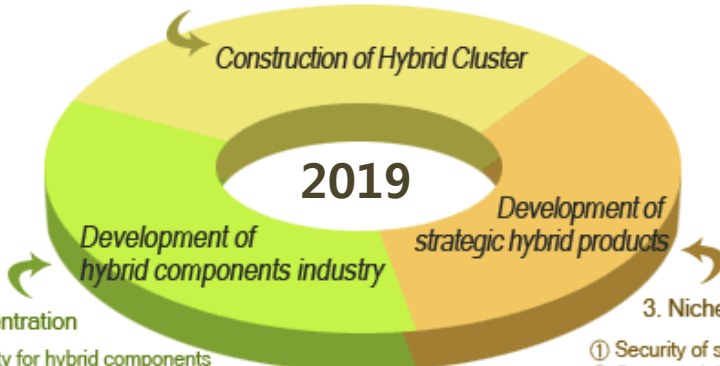
Total building floor area : Total(5,113.4m²) - Main building(4,116.6m²) - Test production building (996.8m²)

Parking capacity : 67 Cars (including two trucks and two disabled parking places)

“Research Institute Leading Future Hybrid Components Technologies”

2. Connection and Efficiency

- ① Developing an industrial complex as a network hub
- ② Establishing educational infrastructure for future automotive technologies



1. Selection and Concentration

- ① Improving R&D capability for hybrid components
- ② Attracting future automobile companies and developing a research cluster

3. Niche

- ① Security of source technologies
- ② Commercialization of strategic products



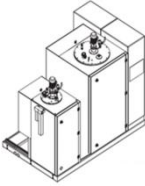





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『 Carbon industry cluster creation business 』 Equipment building roadmap

- 2018 Regional base institution support project Infrastructure equipment to be set up in 『 Commercialization center for carbon molded parts certification 』e built
- Based on the results of the demand survey (4 times), 7 kinds of infrastructure equipment were selected
- Seven devices can be used immediately after installation

	2018 (1st Year)	2019 (2nd Year)	2020 (3rd year)	2021 (4th year)	2022 (5th year)
R&D	Particulars R & D 11 tasks Progress				
Infrastructure equipment construction	 <p>Resin injection system for C-RTM & WCM</p> <p>Resin injection system for S-RTM</p>	 <p>RTM-PCM compound press forming equipment</p>	 <p>Composite processing system for carbon composite materials</p>  <p>High-temperature graphite furnace</p>	 <p>Fine Powder Grinding Classification System</p>	 <p>Carbon material raw material mixing system</p>
Regional base agency support project	<ul style="list-style-type: none"> • Construction project of Carbon Molded Parts Commercialization Certification Center • Construction project of Carbon composite design analysis technical support center • 2019 Year Completion of construction. • Infrastructure equipment to be built in Carbon industry cluster creation business 