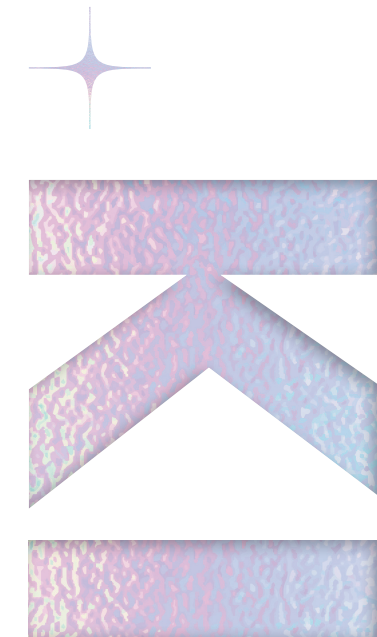


The future  
we desire is realized by  
the materials science



## COMPOSITES RESEARCH

The Composites Research Division develops industry-leading source material technology and commercialization technology through the design, manufacturing, evaluation, and technology development to improve the structural performance of advanced composite materials and to enable new functions. As the cradle of domestic full-cycle composite material technology development, the division is striving to achieve world-class research results.



Taking a step  
forward  
into the future

### COMPOSITES RESEARCH

#### Carbon Composites

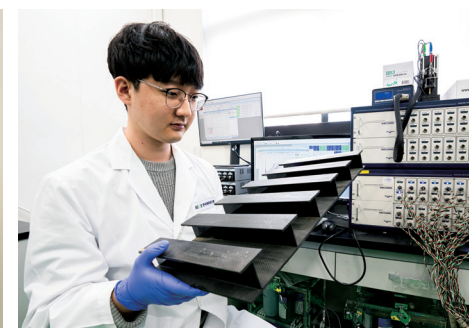
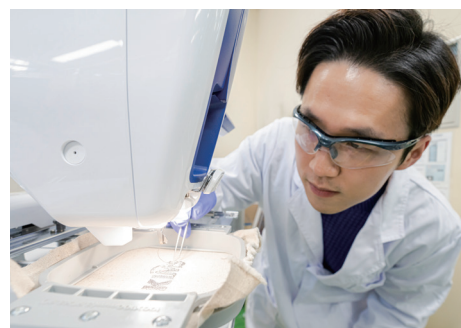
Developing raw materials and innovative processing technology for high performance carbon composites and polymers

#### Functional Composites

Multi-functionalizing raw materials and developing structural control processing and evaluation technology to impart new functions and critical performance to composite materials

#### Composite Structures & System

Developing design, analysis, and test evaluation technology to expand the application of fiber-reinforced composite materials and the practical use of high performance lightweight components and systems

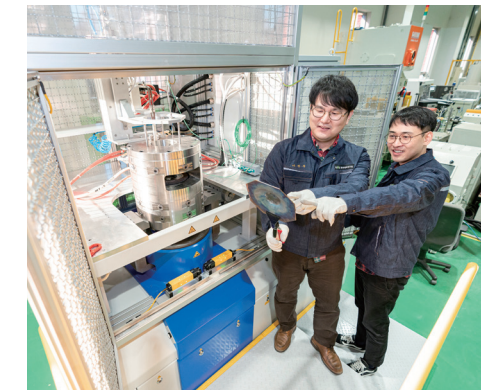


## MATERIALS DIGITAL PLATFORM

The Materials Digital Platform Division spurs industrial innovation through innovative molding and process rationalization technology to increase the added value of materials; maximizing the efficiency of the metal materials processing and developing high-performance and high-quality materials and parts; analyzing material characteristics and identifying principles using computerized materials science; and developing materials and process technology that meets aviation standards.



Leading digital  
innovation in the era  
of the 4th industrial  
revolution



#### Materials Processing

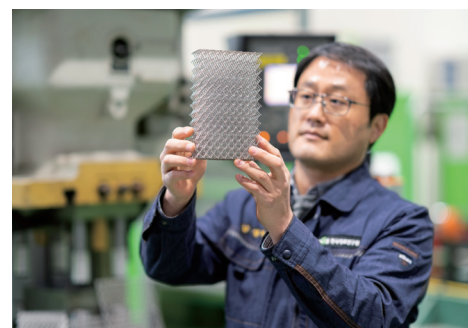
Developing innovative molding technology and smart material processing technology to increase the added value

#### Materials AI & Big-Data

Establishing AI and big data platform of materials and parts and developing virtual engineering technology

#### Aerospace Materials

Self-supporting aerospace materials and parts and establishing certification basis in aviation sector



## MATERIALS TESTING & RELIABILITY

With the safety of materials as the top priority, the Materials Testing & Reliability Division conducts evaluation of mechanical property and chemical analysis of materials and parts; precise analysis of electron, atomic structure, and microstructure using an electron microscope; research, evaluation, and technical support for customized junction technology to secure the safety and reliability of materials, parts, and facilities, including authorized nuclear inspection; and new materials design using computational materials science and materials information.



Trustworthy technology  
based on safety  
as the top priority

### MATERIALS TESTING & RELIABILITY

#### Materials Testing & Evaluation

Supporting characteristic evaluation and developing test techniques to secure the reliability of materials and parts

#### Materials Analysis

Developing and supporting precision analysis technology based on research demand

#### Authorized Nuclear Inspection

Conducting authorized nuclear inspection to secure nuclear power plant structural integrity and developing and supporting related technology

#### Joining Technology

Developing and supporting customized joining technology to secure the safety and reliability of materials, parts, and facilities

#### Corporation Support

Establishing, implementing, and managing corporation technical support plans



## RESEARCH PLANNING COORDINATION

The Research Planning Coordination Division strives to become a global comprehensive materials institute by creating a future vision by discovering new projects internally and externally, coordinating research work, and creating, protecting, and spreading research achievements such as intellectual property rights, papers, and royalties.



The birthplace of  
creating a vision  
for the future



#### Research Planning

Discovering new projects internally and externally and coordinating research work, etc.

#### Technology Commercialization

Creating, protecting, and spreading research achievements such as intellectual property rights, papers, royalties, etc.

#### External Affairs and Public Relations

Cooperating with domestic and overseas organizations and popularizing science, etc.



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INSTITUTE OF  
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SCIENCE

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METALS

POWDER  
MATERIALS

CERAMIC  
MATERIALS

SURFACE & NANO  
MATERIALS

COMPOSITES  
RESEARCH

MATERIALS DIGITAL  
PLATFORM

MATERIALS TESTING  
& RELIABILITY

RESEARCH PLANNING  
COORDINATION



World's leading  
research  
institution in  
materials science

KOREA  
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MATERIALS  
SCIENCE

## SURFACE & NANO MATERIALS

The Surface & Nano Materials Division leads the development of processing and manufacturing technology for nanomaterial-based bio and future energy materials and parts. As the birthplace of domestic surface material technology, the division is striving to sustain its efforts toward attaining world-class research status.



Researching  
technologies to realize  
our imaginations



### Nano-Bio Convergence

Developing nano-bio convergence technology for nanomaterials application in the bio-healthcare sector

### Energy & Electronic Materials

Developing core functional materials and demagnetization technology for future energy, environment and electronics industry

### Electro chemistry

Developing functional thin film and thick film manufacturing technology and surface property control technology using electrochemical processes and developing related material and parts manufacturing technology

### Hydrogen Energy Materials

Developing next-generation water electrolysis key element and electrochemical CO<sub>2</sub> conversion materials and parts technology in developing green hydrogen production technology



## CERAMIC MATERIALS

Through developing differentiated original technology of ceramic materials, enabling various functions, and conducting convergence research by combining polymers and metals with ceramics, the Ceramic Materials Division tries to create future value for the ceramic industry and develop the local community.



Materials innovation  
led by technological  
innovation

## CERAMIC MATERIALS

### Engineering Ceramics

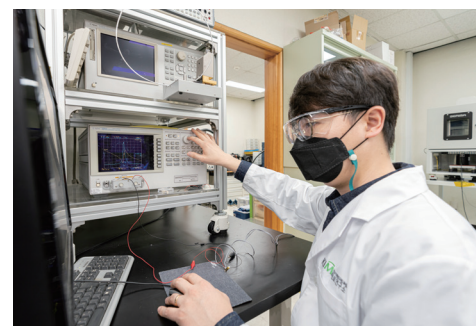
Developing customized ceramic materials and processing technology to enhance mechanical, thermal, chemical, and durability characteristics of ceramic materials

### Functional Ceramics

Developing new materials and full-cycle processing technology to reveal various functions such as energy, environment, and electronics of ceramic materials

### Advanced Biomaterials

Developing material and processing/ equipment technology for bio/medical application of ceramics and other materials and for the simulation of biological structure and function



## POWDER MATERIALS

The Powder Materials Division develops new mechanical, electrical, and magnetic properties through manufacturing and molding powder materials as well as developing parts, technologies, and new processes in order to overcome the limitations of existing materials and create new functions of powder materials for the future.



Connecting tradition and  
the state-of-the-art



### Metal Powder

Manufacturing metal/alloy/composite powder and developing application technology for high characterization of metal powder materials and parts

### Magnetic Materials

Developing organic/ inorganic magnetic powder manufacturing and application technology for high value-added magnetic materials

### 3D Printing Materials

Developing new materials and application technologies customized to lead metal 3D printing technology



## ADVANCED METALS

The Advanced Metals Division conducts studies on advanced metal materials with excellent physical properties such as high strength, lightweight, heat resistance, and corrosion resistance that are the foothold for growth of Korea's major industries such as automobiles, shipbuilding, and machinery.



Increase the value of  
core technology



## ADVANCED METALS

### Steels

Developing advanced materials and processing technology to realize high value-added and high functional steels

### Titanium

Developing materials and processing technology for self-sufficiency and high value-added titanium materials

### Aluminum

Developing Alloy design and processing technology to improve aluminum properties and give new functions

### Magnesium

Designing alloys and developing processing technology for high functioning magnesium materials



## EXTREME MATERIALS

The Extreme Materials Research Institute develops materials that can be stably used in ultra-high temperatures of thousands of degrees or cryogenic temperatures, down to minus hundreds of degrees, and researches material technologies that are the basis for national strategic industries such as aerospace and hydrogen.



Looking for  
materials for  
extreme environment

## EXTREME MATERIALS

### High Temperature Materials

Developing materials and processing technology for high performance and environmental durability of high temperature materials

### Extreme Environmental Coatings

Developing coating materials and processing technology for surface protection of parts used in extreme environment

### Special Alloys

Developing special alloy materials and processing technology to breakthrough limitations and create new functions



### Space and Defense Materials

Developing high-tech space materials, defense industrial materials, and ceramics composite materials for ultra-high temperature with the aim of developing source technology

### Hydrogen Materials Evaluation

Developing test evaluation and computer analysis technology in liquid and high pressure hydrogen environment



## KIMS HISTORY

1976

1976.12

Established the Korea Test Institute of Machinery and Metals

1985 ~ 1986

Developed the VTR Head Drum

1987 ~ 1988

Developed constant velocity joints for front-wheel-drive vehicles through precise forging

1990

1990 ~ 1991

Developed a zirconia watch case

1991 ~ 1993

Developed manufacturing technology for chromium copper contact plates

2000

1999 ~ 2003

Developed explosion-proof coating technology for the inner surface of long-axis high-pressure cylinders

2005 ~ 2008

Developed turbine blades for gas turbines

2010

2007.04

Established the Korea Institute of Materials Science as an affiliated organization of the Korea Institute of Machinery and Metals

2011

Developed thin-film aluminum electrode manufacturing technology using the wet process

2013

Developed linear ion beam source and process technology for wide surface treatments

2014

Developed ceramic coating technology for a large area using aerosol deposition

2017

Developed hydrogen-free high-strength DLC coating process technology

2018

Developed ultrasensitive sensing materials for molecular identification

2022

KIMS MgO Heat-Dissipating Material with High Thermal Conductivity

2020

KIMS started with a new status of an independent organization