



Research & Business Development

Research and development is a crucial determiner of corporate competitiveness, enabling companies to satisfy fast-changing market and customer needs through technical and process advances that increase productivity and lower production costs. At KKPC, we are working hard to ensure that our R&D advances benefit the bottom line through organic collaboration between production, research, marketing, and all other areas.

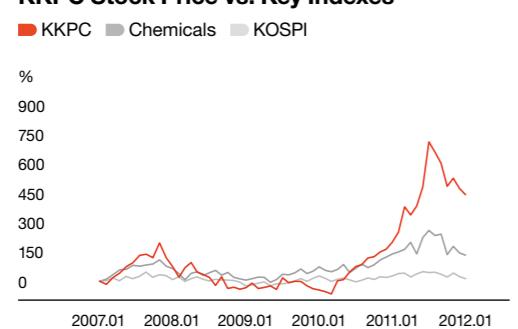
Key Figures

	2011	2010
Share Data		
Number of Shares	33,491,177	28,447,933
Common Shares	30,467,691	25,424,447
Preferred Shares	3,023,486	3,023,486
Market Capitalization in KRW Millions	5,223,522	2,378,190
Credit Rating from Korea Information Service	BBB+	BBB0
Per Share Data (in KRW)		
Net Income	24,723	15,775
Book Value	58,199	41,625
Dividend	2,000	1,000
Share Price		
Year-End	167,500	90,400
High	253,000	91,100
Low	90,200	16,100
Shareholder Structure		
Major Shareholders	23.65%	40.12%
Free Float	41.45%	37.89%

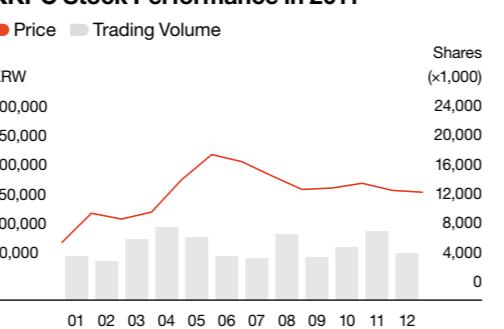
R&BD Organization

We refer to our R&D activities as "R&BD" or research and business development to reflect the common sense idea that business strategy as well as potential market needs must be taken into account from the R&D planning phase to ensure that each project makes a concrete contribution to corporate strategy. We have created an environment that facilitates deeper collaboration by building a research ERP system that integrates with our corporate ERP system. Our R&BD activities revolve around the Kumho Petrochemical R&BD Center in Daejeon, which focuses on the fields of synthetic rubbers, synthetic resins, and next-generation materials, and the Kumho Electronic Materials Laboratory in Asan, which focuses on advanced, value-added materials for the infotech sector.

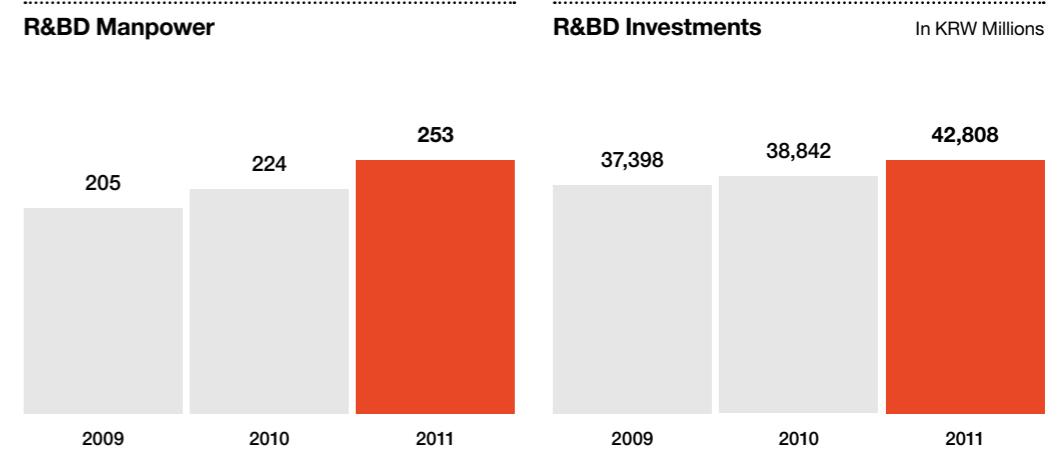
KKPC Stock Price vs. Key Indexes



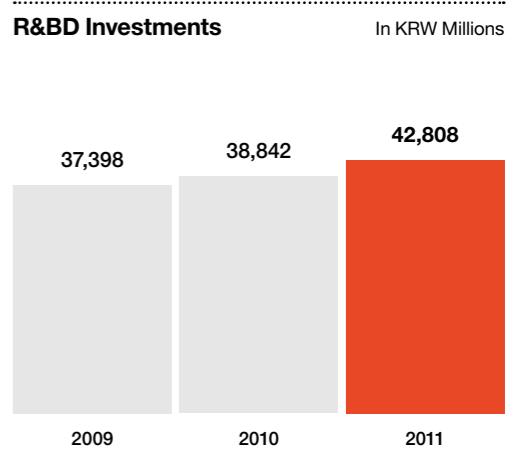
KKPC Stock Performance in 2011



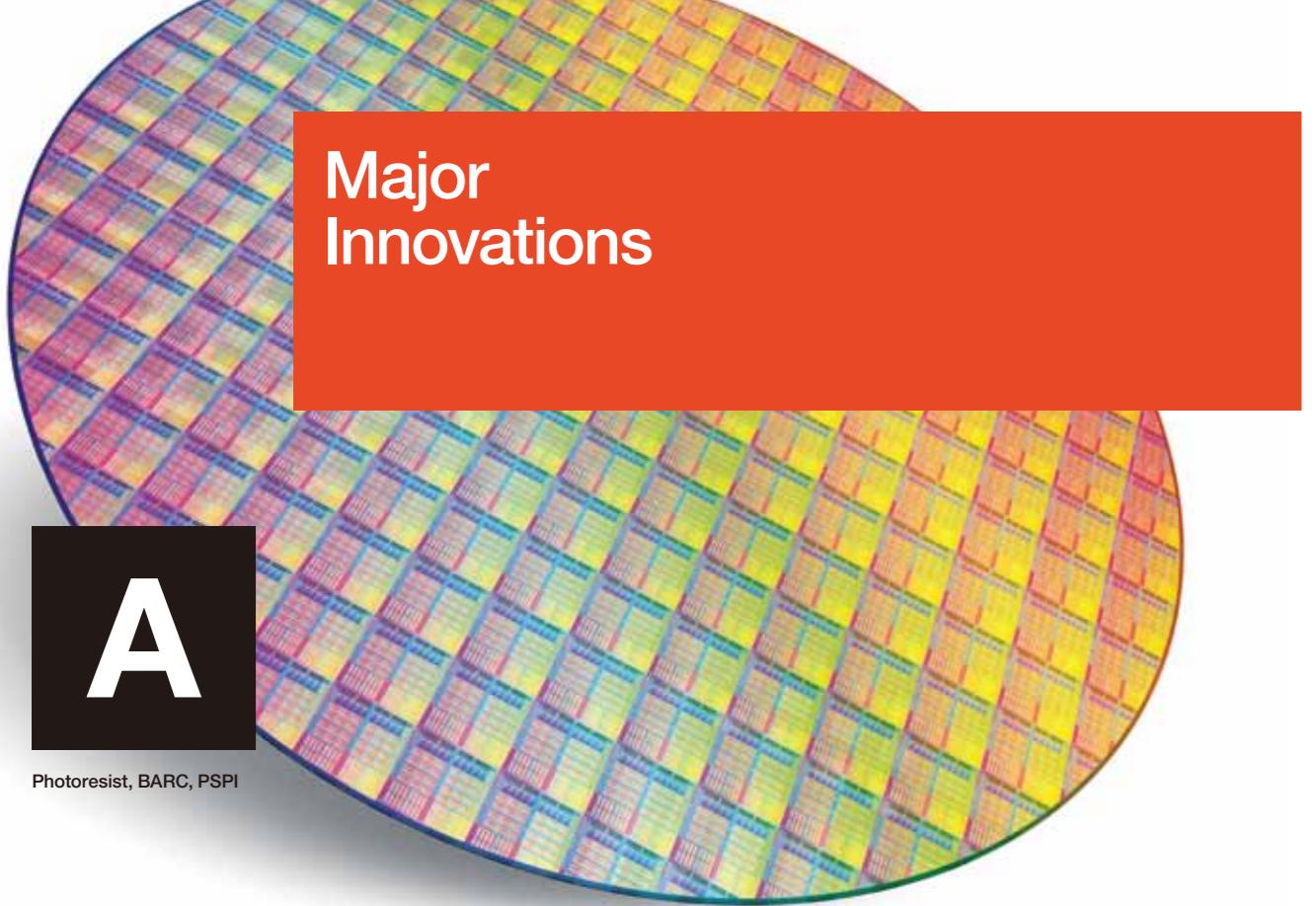
R&BD Manpower



R&BD Investments



In KRW Millions



Major Innovations

A

Photoresist, BARC, PSPI

Seeded Latex

We have independently developed a new latex production process based on the seeded emulsion polymerization process. In addition to enabling a variety of grades to be produced with consistent quality, the seeded latex process also improves productivity, reducing production costs. In 2011, we utilized this process to successfully develop a paper latex that is superior to anything produced by our Chinese competitors and exported the technology to joint-venture Rizhao Kumho Jinma Chemical. In 2012, we plan to offer this technology as a license package to international manufacturers as well as adopting it in our own latex product line.

Butadiene Production Process

We have developed a new production process that uses a new catalyst to produce 1,3-butadiene from n-butane. Our current process extracts butadiene from crude C4 produced by our naphtha cracking center. Benefits of the new process include the production of byproduct C4 raffinate and lower energy consumption since it works at a lower temperature. We plan to commercialize this process as soon as possible as we continue to steadily increase our self-supply ratio of this core feedstock.

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ASA Resin for Co-Extrusion with PVC

We have developed an acrylic-styrene-acrylonitrile (ASA) resin with unique weather resistance, colorfastness, and luster properties designed to be co-extruded with PVC. This resin is ideal for window profile, roofing, fencing, and other building applications that are expected to see steadily increasing demand in China and North America.

Low-Viscosity MSP Paint Binder

Used to enhance the binding and viscosity properties of paint and ink, nonylphenol has been restricted to less than 0.1% of product volume since 2010 because of its connection with hormone disruption and cancer. We have developed a low-viscosity mono-styrenated phenol (MSP) product based on our existing Kumanox-SP antioxidant and acquired government approval for use as a paint additive. Unlike nonylphenol, our MSP binder is a non-alkylphenol compound, bringing the benefits of non-toxicity as well as production efficiency and product quality.



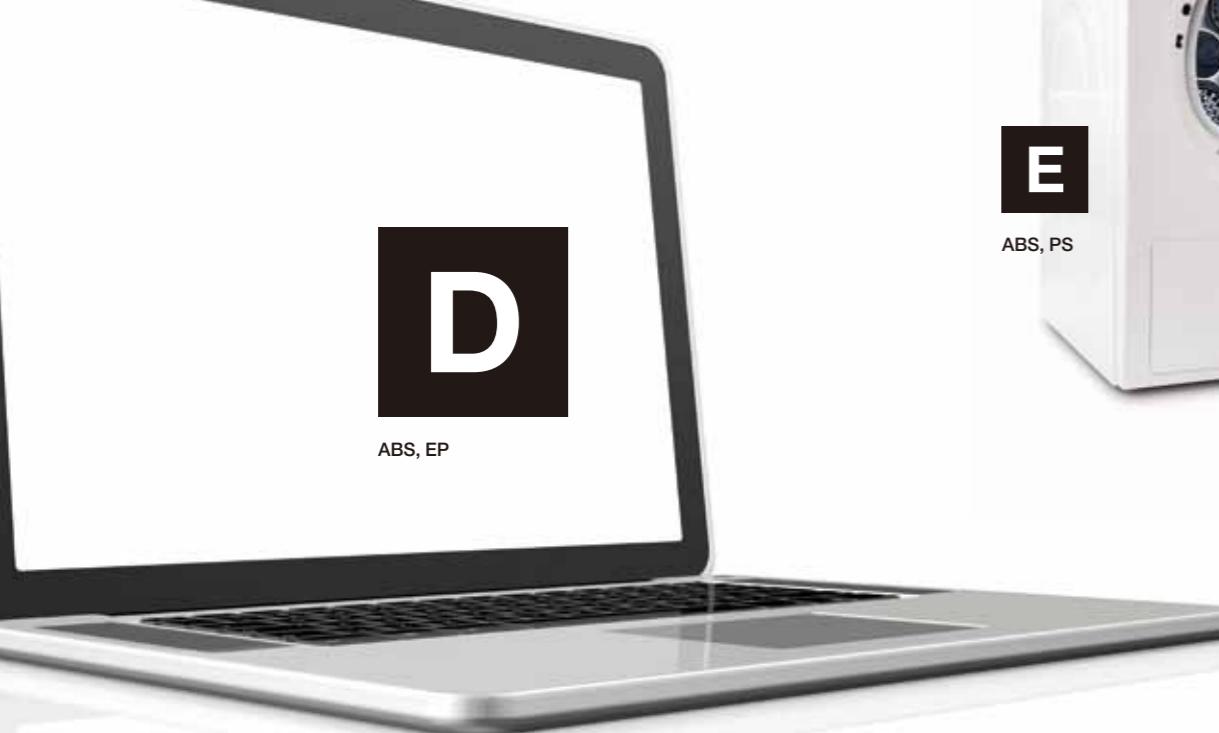
B

SBR, SSBR, BR,
NBR, HSR, SBS, STE



C

SBR, SSBR, BR,
HSR, Nd-BR



E

ABS, PS



ABS, EP

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Nd-BR Productivity Improvements

Our neodymium catalyst-based butadiene rubbers (Nd-BR) are ultra-high cis polybutadiene rubbers that offer superior resistance to abrasion, fatigue, and heat build-up than standard high cis BR grades, making them ideal for use in energy-saving high-mileage tires, premium golf balls, shoes, hose, and belts. We expect growing demand for high-mileage tires and the new tire labeling system entering effect in the EU in 2012 to further boost demand for our Nd-BR grades. The one disadvantage that Nd-BR has had versus Ni-BR and Co-BR grades to date has been lower productivity. We have developed a process that dramatically upgrades Nd-BR productivity to the same level of those competing materials.

ArF Photoresist

Argon fluoride (ArF) photoresist is a value-added material for making extremely small nanometer-scale patterns in the semiconductor photolithography process for semiconductor memory ranging from 256 MB to 16 GB. Close customer involvement from the development phase is important due to the technical performance requirements. Since beginning mass production of our in-house developed ArF photoresist in 2007, we have steadily expanded our customer list and range of product applications for this high-tech material.

BARC Materials

Bottom anti-reflective coatings (BARC) are applied as an underlayer for photoresist to suppress scattering and standing waves, improving manufacturing productivity by making it easier to create the nanometer-scale patterns used in photolithography. We completed development of high-n BARC materials for the advanced ArF immersion process in 2011 and are now focusing on bringing them to market in 2012.

Coating Materials for Display Films

These UV-cured transparent liquid coating materials are used in the display and electronic materials fields. We are now preparing to bring to market touchscreen and industrial hardcoating solutions we developed in 2011 as we push forward with the development of coatings for the rapidly-growing OLED display industry.

LCD Sealant

These sealants are used in the LCD panel manufacturing process to join the TFT and color filter panels, forming and protecting the cells that hold the liquid crystal material. We developed our first prototype large-panel sealant in 2009. We are now focusing on the development of a small-panel sealant as we target new business in the fast-growing tablet PC and smartphone segments.



F

PS



Antioxidants