



RE:ACT

# K-Innovation

KKPC responds decisively to market conditions through ingenuity and agility, with a particular focus on product innovation. As a result, we have been able to strengthen our portfolio to include 17 world-class products, high value-added products and next-generation growth businesses, which will enable us to accelerate the pace of innovation as we seek to become a global leading chemical group.

## WORLD-CLASS PRODUCTS

### SBS – Newly selected as a world-class product

Styrene butadiene styrene (SBS) is a copolymer made by polymerizing butadiene and styrene in an organic solvent. Developed in 1994 using in-house technology, SBS received the IR52 Jang Young-shil Award in 1996, and was selected as a world-class product in 2018 as a result of consistent efforts to improve the properties of the product and to expand market. In 2018, we completed the development of an SBS grade that conforms to the Food and Drug Administration (FDA) standards for plastic modification and adhesive usage, which will enable us to satisfy market requirements and customer needs, thereby increasing sales worldwide.



### GLOBAL PLAYER

KKPC is developing globally competitive products, promoting exports, and leading global markets. In 2018, SBS was selected as our 17th world-class product, keeping us on track towards the realization of Vision 2020.

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**SSBR – Adding values to tires**

Solution styrene butadiene rubber (SSBR) is a high value-added synthetic rubber which improves a tire's wear resistance and fuel efficiency. In order to overcome the limitations caused by a tire's fuel efficiency performance being in inverse proportion to braking power, we acquired a technology for manufacturing synthetic rubber denaturants and continue to release new products. In particular, we have focused on cutting-edge synthetic rubber technologies since 2016, with demand for SSBR forecast to increase in line with the launch of a new tire efficiency grading system in China. By doing so, we are further strengthening our leadership in the global synthetic rubber market.



**KNL 834 – Launching a new NB latex product**

KKPC continues to release new market-leading products based on our technological know-how in the area of NB latex. At the end of 2017, we developed KNL 834, with increased tensile strength and stability, and began sales in 2018. By developing distinctive products and expanding capacity, we will further strengthen our leading position in the high-growth NB latex market. In addition, we will ensure stable sales by building sales systems for existing customers and attracting new customers.



**Styrenic-type impact modifiers – Making global impacts**

ABS (including ASA) resins are commodity resin products which are used for products that are part of our daily lives, including electrical and electronics, automobiles and construction materials. KKPC is focused on higher value-added compounding products, and we are No. 1 globally in the market share for an impact modifier (powder), which is the most important compounding resin products. Leveraging our in-house technologies, we recently developed an impact modifier which has outstanding mechanical properties and overcome the coloration limitations of existing ASA products by using BD/BA rubbers. We are now making preparations for the full commercialization of this product.



**GROWTH DRIVER**

KKPC's high value-added, highly functional products set new standards in the global synthetic rubber and synthetic resin markets. Our outstanding products add values to everyday life, which in turn supports our continuing growth.

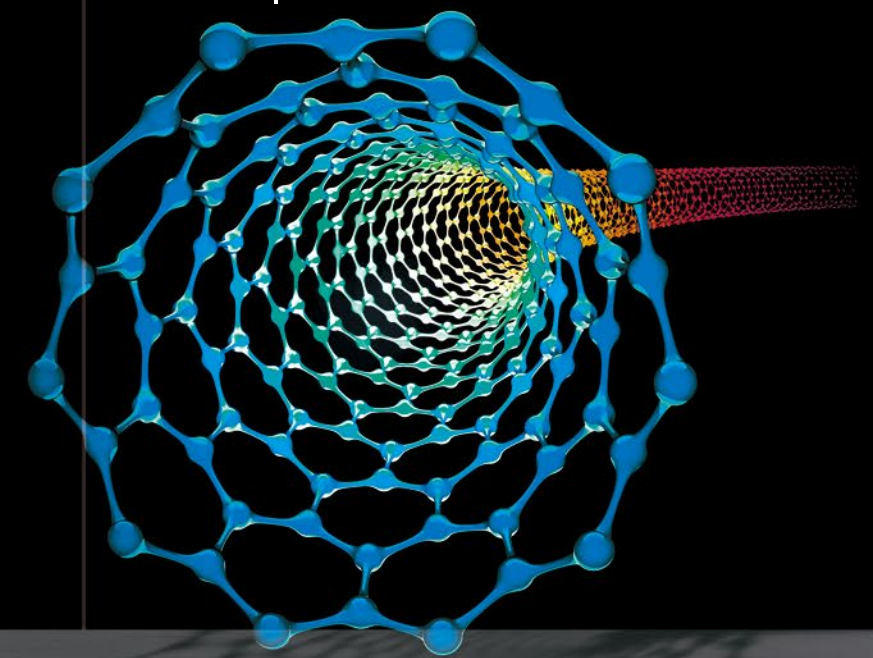
**Display technologies for future growth**

The display industry is focused strongly on the potential for rollable displays. KKPC has developed a transparent resin that can be applied to OLED rollable TVs. Its performance has been successfully evaluated, and it is now being commercialized. We have also developed a functional adhesive that protects OLED devices, and we are now verifying its performance for a diverse range of OLED devices. Based on these successes, we are expanding our display products, and we anticipate strong growth in this area.



**New possibilities of carbon nanotube technology**

Carbon nanotube (CNT) is a major new development in material science as it is not only lightweight but also delivers high tensile strength and outstanding electrical conductivity. KKPC has been developing composite products which apply CNT technology to our existing products. In resin business, we are using the technology to differentiate our commodity products, including high impact polystyrene (HIPS) and ABS compounds. In addition, we are developing high value-added products, such as HIPS and PP masterbatches, and we expect to begin sales in 2019. In rubber business, we have completed the development of an NdBR masterbatch for tires, and R&D is now taking place to ensure effective commercialization. In solution products, we have completed the commercialization of a black latex that can be applied to industrial gloves. We are also developing CNT for lithium secondary batteries, to be used in next-generation high-performance batteries.



**New milestones in PR for 3D NAND flash memory**

3D NAND flash memory vertically arranges circuits of 2D NAND flash memory. With fierce competition over layers in the 3D NAND flash memory market, the thickness of photoresist (PR) being demanded by our customers is increasing steadily. As a result, all PR manufacturers in Korea and overseas are focusing on developing thick PR which can increase the number of layers. In 2018, KKPC successfully developed KrF for 3D NAND flash memory and i-line thick PR, and began sales at home and abroad. Moreover, we are expediting the development of a thick PR for next-generation 3D NAND flash memory.



**NEW FRONTIER**

KKPC has been at the forefront of innovation in the petrochemical industry. We are now expanding into new business areas with cutting-edge technologies, in order to improve synergy with existing businesses, generate new growth, and thus drive more innovation.