

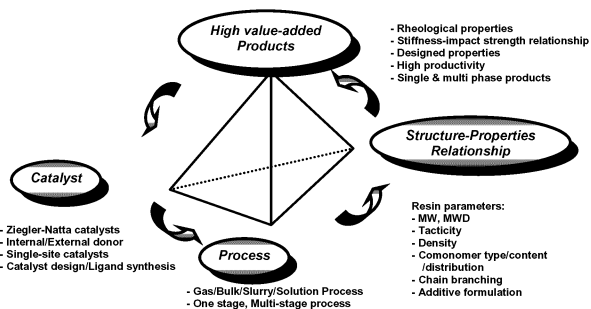
## Value-added Polyolefin Products

Myung-Ahn Ok

Principal Research Scientist  
Chemicals R&D Center, SK Corporation R&D Division, 140-1  
Wonchondong Yuseonggu, Daejeon 305-712, Korea  
maok@skcorp.com

Polyolefins show a very healthy growth rate among commodity polymer resins due to their low feedstock prices, recyclable and environmentally friendly characteristics and easily controllable performances. Major capacity investment in polyolefin field is now moving from technology region to consumer region such as China and India, and to feedstock region such as Middle East Asia. Therefore, world polyolefin market is being separated into two categories: differentiated products with high performance and low cost commodity products. Accordingly, business restructuring among major companies is in progress very actively.

Key success factors for polyolefin business in the other region such as Korea are development of highly value-added products and new applications and substitution of PVC, PS, PET and other EPs. To add additional value to commodity polyolefin products, high level of platform technology such as catalyst, process and structure-properties relationship is needed as shown in **Fig. 1**.



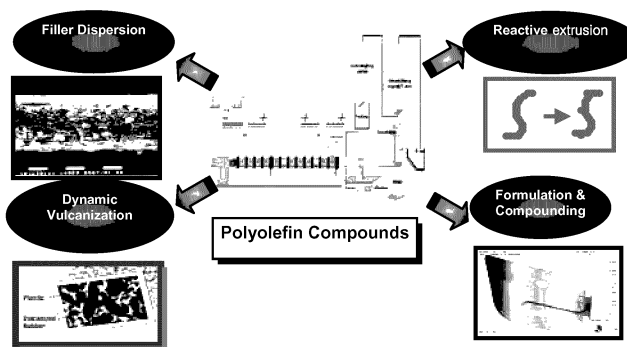
**Figure 1.** Technology platform for value-added polyolefin products

Progress on polyolefin products has been very closely related to catalyst and process technology. According to the above trend, SK Corporation has devoted a lot of research effort for development of new value-added polyolefin products based on proprietary technology platform. Thanks to the effort, SK polymer business has achieved a reduction in operating cost to one half of early 1990's and about 50% fraction of differentiated products among product portfolio.

The most dramatic achievement has occurred in polyethylene pipe such as PE-RT (Polyethylene raised Temperature) which can be used for hot water and heating pipe application. SK developed a new PE-RT material which is satisfying the requirements specified in the International standard of ISO DIS 24033 and NSF following Dow Chemicals. SK's octene LLDPE products possess a strong position in film area such as stretch wrap, heavy duty wrap, lamination packaging, food packaging, etc. Also, thin HDPE film based on bimodal technology shows high stiffness and sealing strength, and excellent processibility.

In polypropylene area, using a proprietary catalyst and process technology, SK developed new HCPP (high crystallinity) which has balanced properties between stiffness and impact strength due to improved isotacticity, rubber morphology and better flowability. Also, RX PP (new random excellent polypropylene) offers outstanding optical properties with improved balance in mechanical properties.

SK Corp. has also developed a technology platform for polyolefin compounds (**Fig. 2**). Matt compound is no glossy material using morphology control of polymer surface. Also, breathable compounds, adhesive polyolefins and thermoplastic vulcanizates are excellent examples using SK's compounding technology.



**Figure 2.** Technology platform for polyolefin compounds