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New development and applications of polyurethane materials

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Polyurethane (PU) materials are versatile with a wide variety of applications. The high demand for lightweight and durable materials from end-use industries such as furniture, construction, electronics and appliances, automotive, footwear and packaging has driven PU growth in recent years. It is projected that the global PU market will reach above USD 105 billion in 2025 from about USD 55 billion in 2016 at a CAGR 7%. The versatility of polyurethanes is highly derived from the wide selection of building blocks available to materials manufacturers. This presentation will review general polyurethane chemistry, polyurethane building blocks and material properties, and further discuss recent development and applications. The growth of polyurethane industries largely depends on the cheap and easily available feedstocks of isocyanates, polyisocyanates, polyols and chain extender co-reactants such as water, alcohols, and amines. The high demand and rapid growth of PU materials in the emerging markets such as China in last two decades has played a significant role in the global PU market, and offered opportunities for petrochemical industry. Wanhua Chemical Group Co. Ltd., in China as one example has emerged and grown as the world top MDI and isocyanates producer. This presentation will also show some of recent development of PU raw materials and products at Wanhua Chemical Group. Some of the new products include PU foams in insulation applications, PU coatings for construction, thermoplastic polyurethane elastomers (TPU), and composites. The future challenges facing polyurethane industry and growth will be also discussed.

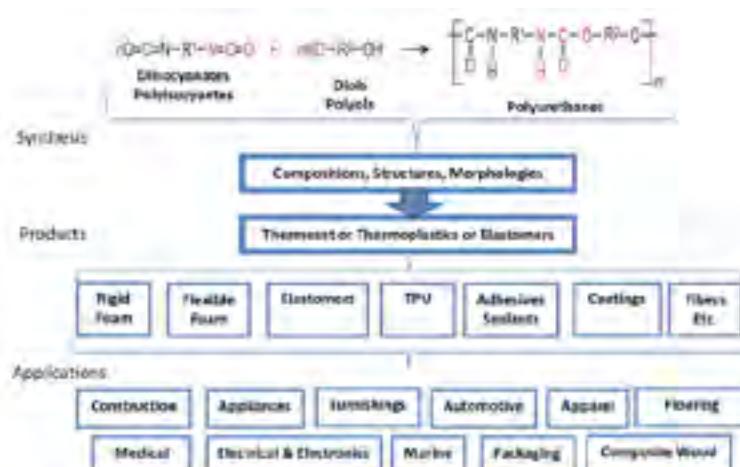


Figure 1: Polyurethane and applications.

Biography

Bing Lu is the Director of High Performance Materials Research Center, Wanhua Chemical Group Co. Ltd. He has more than 25 years of research and development experience in the fields of polymer synthesis and products, including olefin polymerization catalysts, olefin polymerization and process, polymer modification and functionalization, polycondensation polymerization, polymer compounding and composites. He is an expert on a variety of plastic materials such as PE, PP, TPO, PBT, PET, PCT, TPEE, POM, CA, LCP, PPS, PEEK, and PU. He has previously worked with Celanese, Formosa Plastics USA, and SINOPEC. He obtained his PhD in Polymer Science from Pennsylvania State University in 1999. He has more than 30 patents and publications.

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