R&D History at the DuPont Experimental Station

Established in 1903, the DuPont Experimental Station was one of the earliest industrial research laboratories in the United States. Its objective was to investigate cellulose chemistry so that DuPont could grow from explosives into new fields. In 1911 the Chemical Department, forerunner of DuPont Central Research & Development, was organized as a separate unit. Work was subsequently begun on ammonia synthesis.

A formal program of basic research in physical and organic chemistry, physics and chemical engineering was initiated in 1927. This program brought spectacular results in the early 1930s: synthesis of the first linear crystalline superpolymers which could be oriented to strong filaments (leading directly to the introduction of nylon) and the synthesis and polymerization of 2-chloro-1,3-butadiene (leading to the commercialization of neoprene, the first general-purpose synthetic rubber). Basic research on viscose spinning led in 1934 to the commercialization of the first high-tenacity rayon tire cord, and research on the synthesis and polymerization of tetrafluoroethylene during the early 1940s led to commercial production of Teflon® TFE-fluorocarbon resin.

A major round of construction was carried out at the Experimental Station between 1948 and 1960, providing expanded facilities for a host of new research programs. Results of these programs during the 1950s included Hypalon® synthetic rubber (the culmination of work on the chlorosulfonation of polyethylene), two substituted ureas for industrial and agricultural weed control, and the discovery and development of polyimide polymers. Research at the Experimental Station also led to the development of Dycril® photopolymer printing plates, the first of many important DuPont innovations for the printing and electronics industries based on photopolymerization.

In the 1960s, researchers at the Experimental Station prepared the first cell-free biological extract capable of fixing atmospheric nitrogen, and developed Lycra® spandex fiber, a continuous filament elastic textile yarn used in bathing suits, sports wear, leisure wear and leotards. That decade also saw the discovery of ferredoxin, a biological electron-transfer agent of fundamental importance; and the development of products ranging from plastic fiber optics to superior catalyst supports for chemical process and pollution control.

During the 1970s, Experimental Station research resulted in the development of Kevlar® high strength aramid fibers; chromium dioxide magnetic particles for use in audio and video tape; and elastomeric relief plates for flexographic printing, which are prepared directly from film negatives and thus eliminate engraving and molding. A sampling of other major products developed at the Experimental Station during the 1970s includes Toves® water gels (non-nitroglycerin, water compatible, cartridge explosives), Lucite® dispersion lacquer and new procedures for the "aca" discrete clinical analyzer, which enables hospitals to analyze serum and other body fluids quickly and accurately.

The early 1980s and 1990s have seen a further expansion of facilities at the Experimental Station. Building 500, one of the two newest laboratory buildings, is an award-winning, state-of-the-art discovery chemistry facility.

In 2008, the company opened the DuPont Innovation Center, a market-back science incubator which co-locates the Applied BioSciences business next to the scientists creating the pipeline of renewably sourced products, including next generation biofuels and biomaterials such as Sorona® polymers, Susterra™ propanediol, and Cerenol™ polyols. The Innovation Center includes state-of-the-art features for energy efficiency and environmental stewardship, using more than 30 DuPont materials and employing a 37.8 kilowatt solar panel array on the roof that also uses many DuPont photovoltaic materials.

Today more than 2,000 scientists and researchers – including more than 500 with Ph.D.s – pursue science-powered innovations for global markets. Collaborating to build on a legacy of scientific discovery, DuPont scientists are developing innovations to help increase food production, reduce the dependence on fossil fuels and protect people and the environment from harm. These include DuPont™ Suva® refrigerants, the DuPont™ BAX® food safety systems, Plenish™ high oleic soy oil, New Harvest™ renewably sourced Omega-3 fatty acid supplement, high efficiency Solamet® photovoltaic metallization pastes, and RelyOn™ MultiPurpose Disinfectant Cleaner Solutions.

Research and development is now under way in areas that include nanotechnology, emerging displays technologies, crop genetics, and biomaterials produced from renewable resources such as corn. These developments could lead to foods that help prevent diseases and brittle bones, "smart" materials that can adjust performance on their own, microorganisms that produce biodegradable products and innovative materials for personal protection. Looking to the future, the Experimental Station remains one of the most advanced productive industrial research facilities in the world.

9/10

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