



A few of the Bakelite objects in CHF's collection.

[IN THE COLLECTION]

Bakelite's Birthday

What would modern life be like without synthetic plastics, the ubiquitous stuff of toys, furniture, cookware, office supplies, sports equipment, medical devices, and countless other items? This year marks the 100th anniversary of the first wholly synthetic plastic, Bakelite. This quintessentially modern invention, created by the Belgian-born chemist Leo Hendrik Baekeland in 1907, became an icon of early-20th-century style and set the mold for the modern plastics industry. Today plastics production employs millions of people around the globe, and plastics are some of the most-used materials in manufacturing.

The term *plastic* refers to any number of synthetic polymers that can be shaped or molded into various forms. In 1870 the American inventor John Wesley Hyatt set off a plastics manufacturing craze when he produced celluloid, a synthetic material made from cellulose, a natural polymer derived from trees and other plants. Cellulose-based plastics soon appeared in textiles, combs, and even billiard balls, but the race was on to create a wholly synthetic plastic that could be manufactured and molded on a commercial scale.

Leo Hendrik Baekeland was born in Ghent, Belgium, in 1863 and was the son of a cobbler and a domestic servant. He attended the University of Ghent and was appointed assistant professor of chemistry soon after graduation. In 1889 he married his adviser's daughter and left for New York City on a fellowship to continue his study of chemistry, but Baekeland soon became disenchanted



Leo Hendrik Baekeland. CHF Collections.

with academic research. He decided to stay in New York and establish a career in the United States' growing chemical industry. Baekeland's instincts were good; by 1899 his invention of Velox, a new type of photographic paper, had made him a rich man. He installed a personal laboratory in his Snug Rock estate in Yonkers, New York, where he began to investigate a number of projects with his assistant, Nathaniel Thurlow.

Like many scientists involved in the search for synthetic plastics, Baekeland and Thurlow turned their attention toward phenol-formaldehyde resins. German chemists had created hard, insoluble substances by mixing phenol and formaldehyde, but the resulting products were impossible to mold or shape. Baekeland's critical insight, recorded in a laboratory notebook on 19 June 1907, was to combine the two materials in a sealed autoclave under heat and pressure. The resulting sticky, amber-colored resin, which he called Bakelite, could be quickly molded, and it retained its shape when heated or subjected to solvents. He deferred announcement of his discovery until 1909, when he also introduced the Bakelizer, a massive steam-pressure vessel—35 inches wide, 40 inches deep, and nearly 6 feet tall—that could produce the resin on an industrial scale. Used in electrical components, automobile distributor caps, handles, containers, and, most famously, jewelry, Bakelite was marketed as “the material of a thousand uses.” Bakelite was ultimately replaced by other plastics that were less brittle and offered brighter colors, but the legacy of the first synthetic plastic lives on in every part of contemporary life. For this reason CHF actively acquires examples of Bakelite and already holds a number of items in its collections. —AW