

The Development of Plastic Photochromic Lenses: an Historical Perspective

Dr. Barry van Gemert, PPG Industries, Inc.

Photochromism, once nothing more than an interesting novelty, is today the basis for commercially successful eyeglasses that reversibly darken outdoors. The concept of photochromic eyeglasses existed long before the chemistry was developed that made the product possible. Over the years a number of different scientists, universities and companies have been involved in this area of research and each has made a contribution. A photochromic glass product was developed by Corning Inc. in the 1960's, but with the world-wide shift from glass to plastic eyeglasses, there arose a need for organic photochromic compounds. Key milestones included the discovery of photo-stable ("fatigue" resistant) oxazines and naphthopyrans. The very first plastic product was American Optical's *Photolite* lens introduced in 1981. Although this lens proved unsuccessful, it sparked the interest of a number of companies who viewed this as a market opportunity. After another ten years of intensive research on dyes and lens substrates, Transitions Optical, a joint venture between PPG Industries and Essilor, introduced the first commercially successful plastic photochromic lens. In this lecture, the interesting story behind these developments will be chronicled.