Richard Zsigmondy Biography

Richard Zsigmondy

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Biography

The son of a very successful dentist, Richard Zsigmondy was educated at the finest Austrian and German institutions. After completing his undergraduate studies in Vienna, Austria, he enrolled at the University of Munich, where he received his Ph.D. in 1890. An organic chemistry student in Vienna, Zsigmondy turned to the study of colored glass during his postgraduate years. Thus, after graduating from the University of Munich and lecturing there for a few years, he began work in Jena, Germany, as an industrial chemist at the Schott Glass Manufacturing Company, whose relationship with the renowned Zeiss Optical Works had earned it international recognition.

At Schott, Zsigmondy studied *colloidal compounds* in tinted glass, inventing a popular white variety called milk glass. It was this research that led him to the invention of the ultramicroscope. Colloids are substances composed of very tiny particles suspended in a fluid. The particles within colloids are so fine as to remain stably dispersed within the fluid--that is, they do not settle. They are far too small to be seen, even in a compound microscope, but their presence affects the properties of the fluid; for example, tiny particles of gold suspended in glass (such as the glass at the Schott Company) give it a deep red or purple color. Other examples of colloids are plasma and egg white.

Though Zsigmondy knew that colloid particles could not be seen under a microscope's lens, and were thus impossible to study directly, he hoped that they might be observed indirectly. He reasoned that, if placed in the path of a beam of bright light, the tiny particles would scatter that light, revealing their presence and position (just as particles of dust can be seen dancing in a shaft of sunlight). Working with H. F. W. Siedentopf (1872-1940), a physicist at Zeiss Optical, Zsigmondy designed the ultramicroscope, a device allowing him to view the motion of particles within a colloid. Though it has since been made obsolete by the ultracentrifuge and the electron microscope, the ultramicroscope was the first breakthrough in the very specialized field of colloidal chemistry. For his work in this area, Zsigmondy won the 1925 Nobel Prize for Chemistry.