Adolf Johann Friedrich Wilhelm von Baeyer Biography

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Biography

Baeyer was born in Berlin, Germany, on October 31, 1835. He attended school in Heidelberg where he was taught chemistry by Robert Bunsen. He eventually left to study organic chemistry under Friedrich Kekulé. With Kekule, Baeyer studied uric acid and its derivatives and discovered barbituric acid, the parent compound of sleeping pills, or barbiturates. He received his doctorate in 1858 for his investigation of arsenic methyl chloride. Baeyer taught chemistry in Berlin from 1860 to 1872, during which time he discovered phthaleins, that is, colored dyes. In 1875 he succeeded Justus von Liebig at the University of Munich's chemistry department, where he worked until his death in 1917.

Baeyer was more interested in research than teaching. He taught only elementary chemistry while he experimented with Kekule's structure theory. Baeyer researched the condensation reactions of aldehydes and ketones. In 1870 he developed a theory, now disproven, that plants combine water and carbon dioxide to form oxygen and formaldehyde, which eventually is transformed into carbohydrates.

He began working with indigo in 1865. Where Auguste Laurent (1807-1853) had added oxygen to indigo and split the molecule, producing insatin, Baeyer wished to remove the oxygen from insatin to arrive at the parent compound of indigo. Baeyer developed a technique useful for removing oxygen and thus converting molecules to simpler forms. In 1878 he distilled the compound over hot zinc dust and produced indole, indigo's parent compound. He then went on to produce insatin from simple chemicals, although the industrial production process of indigo was developed by others. During this period he studied how the chemical structure of an organic compound determines its optical properties.

Baeyer developed the strain theory in 1885 to explain why naturally occurring ring compounds tend to have five or six members. According to Baeyer, three member rings would form triangles and four member rings would form squares. The small angles would place too great a strain on the bond, causing it to decay quickly. Rings with more than six members would have similar problems because the bond angles would be so large. But Baeyer's theory presupposes that the rings are planar. Ulrich Sachse questioned this assumption as early as 1890, and in 1969 Sir Derek Barton proved that the strain theory 's planar assumption was wrong.

Baeyer was awarded the Nobel Prize in Chemistry in 1905 for his work with dyes. He died in Starnberg, Germany in 1917.