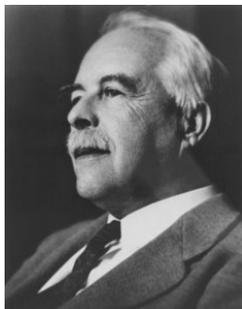


## Lewis and Langmuir

### Skills to Develop

- List some of the achievements from Gilbert Newton Lewis and Irving Langmuir
- Describe the relationship between Lewis and Langmuir

You have probably already heard of Gilbert Newton Lewis' ideas. He was one of the great chemists of the 1900s, and developed the basic concepts of chemical bonding still taught to all chemistry students today. He also introduced an important acid-base theory, and did a lot of work in physical chemistry, making the energy concepts (like enthalpy and equilibrium relationships) truly useful to chemists. Although I think it is generally agreed now that he deserved at least one Nobel Prize, he did not get it at all because he did not advertise his work, and made himself a little unpopular.



Gilbert Newton Lewis

You probably haven't heard of Irving Langmuir, another great chemist from the same time. He worked on surface chemistry, and did most of his research in an industrial lab, where he invented a better light bulb and hydrogen arc welding, which is much hotter than previous welding techniques. When he and Lewis first met, they were friendly and impressed with each other. Lewis vigorously defended Langmuir when another chemist tried to steal credit for one of Langmuir's ideas. Later, though, Lewis wrote a few brilliant papers on chemical bonding, then served in World War I. The papers were not noticed, until Langmuir read them and was instantly converted. He published several more papers on the same topic, applying Lewis' ideas, and then traveled widely speaking about the theory. It became well-known and accepted because of Langmuir's efforts. Although Langmuir credited Lewis for the original idea, perhaps he didn't give Lewis as much credit as he should have. And other people associated the theory with Langmuir, because he was the one who popularized it. Lewis began to feel that Langmuir had stolen his ideas.



Irving Langmuir

The story has a sad end. When Lewis was 70, he still had not won the Nobel Prize, while Langmuir had won it for his work on surface chemistry. One day Langmuir visited University of California at Berkeley, where Lewis had built the chemistry department and run it for years. Langmuir gave a talk, and a few days later was given an award by the Berkeley chemistry department. That day, Lewis had planned an experiment using hydrogen cyanide, a deadly poison, as a solvent. About an hour after Lewis started work, he was found dead. It's not clear exactly how he died: perhaps it was a heart attack, or perhaps it was a suicide using the hydrogen cyanide. Whichever it was, it may not be coincidence that Lewis had lunch with Langmuir that day.

## Contributors and Attributions

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