

Activation Energy Encyclopedia Article

Activation Energy

The following sections of this BookRags Literature Study Guide is offprint from Gale's For Students Series: Presenting Analysis, Context, and Criticism on Commonly Studied Works: Introduction, Author Biography, Plot Summary, Characters, Themes, Style, Historical Context, Critical Overview, Criticism and Critical Essays, Media Adaptations, Topics for Further Study, Compare & Contrast, What Do I Read Next?, For Further Study, and Sources.

(c)1998-2002; (c)2002 by Gale. Gale is an imprint of The Gale Group, Inc., a division of Thomson Learning, Inc. Gale and Design and Thomson Learning are trademarks used herein under license.

The following sections, if they exist, are offprint from Beacham's Encyclopedia of Popular Fiction: "Social Concerns", "Thematic Overview", "Techniques", "Literary Precedents", "Key Questions", "Related Titles", "Adaptations", "Related Web Sites". (c)1994-2005, by Walton Beacham.

The following sections, if they exist, are offprint from Beacham's Guide to Literature for Young Adults: "About the Author", "Overview", "Setting", "Literary Qualities", "Social Sensitivity", "Topics for Discussion", "Ideas for Reports and Papers". (c)1994-2005, by Walton Beacham.

All other sections in this Literature Study Guide are owned and copyrighted by BookRags, Inc.

Contents

Activation Energy Encyclopedia Article.....	1
Contents.....	2
Activation Energy.....	3

Activation Energy

The term activation energy refers to the minimum amount of **energy** required for a chemical reaction to occur. Most reactions require that **atoms** and **molecules** crash into each other with a great deal of force. These violent collisions must occur with enough energy to cause the chemical bonds within the molecules to be weakened or broken. When this occurs, the reactant molecules form an **activated complex** from which the product molecules are formed. Depending on the strength of the bonds within the reactant molecules the activation energy can be quite large, making the activated complex difficult to form.

Fortunately most activation energies are large enough so that many combinations of substances can coexist at room temperature without reacting to a great extent, even if they are favored by **thermodynamics**. For example, it is thermodynamically favorable for organic materials and fuels such as **wood**, **coal**, oil, and gas to react with **oxygen** to form **carbon dioxide** and **water**. Yet fuels and other organic compounds, including living organic tissue, come into contact with oxygen all the time under normal conditions and are very stable. We know from experience that these reactions don't occur unless we provide a spark that supplies the needed activation energy. Only then do these reactions occur readily.

Thanks to activation energies many combinations of substances remain stable and non-reactive under normal conditions for a very long time. If this were not the case, many of the materials and fuels that we now take for granted would long ago have literally "go up in smoke."