Microwave Encyclopedia Article

Microwave

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

Microwave Encyclopedia Article.....1

Contents.....2

Microwave.....3

Microwave

A microwave is an electromagnetic wave with a very short wavelength—between.039 in. (1 mm) and 1 ft (30 cm). Within the electromagnetic spectrum, microwaves can be found in the region between radio waves and shorter infrared waves. Though originally the basis for early radar systems, their short wavelengths have made microwaves ideal for use in radio and television broadcasting.

Microwaves are created by means of a microwave generator. All microwave generators are oscillators that produce waves of a precise tunable frequency. They are transmitted using a device whose design resembles that of the radio transmitter. In the case of microwaves, the generator is often coupled with a power amplifier, a modulator (which allows the microwave to carry information), and an antenna system. Microwaves can be transmitted using amplitude modulation (AM) or frequency modulation (FM), as well as phase modulation.

The ability of microwaves to transmit a very strong, clear signal at relatively low power has been very useful in the development of radar, beginning in the 1940s. By pulsing the signal, operators can detect echoes as the microwave strikes a target. Radar remains the largest application of microwaves, and many of the developments in microwave technology have come as a result of radar research and funding.

In communications, microwaves are valued for their extremely short wavelengths, which allow them to transmit along a vast range of frequencies without causing signal interference or overlap. For this reason, microwaves have become the key element to the development of multichannel transmissions of television, radio, and telephone signals.

Most people associate microwaves with cooking rather than communication. Originally dubbed the "radar range," the modern microwave oven was invented in 1946 by the American researcher Percy Le Baron Spencer. While experimenting with short-wave energy, Spencer noticed that a piece of candy in his pocket had melted, apparently due to exposure to microwaves. He designed a device that could heat foods by creating a molecular vibration within them, cooking the food from the inside out. The first microwave oven was marketed by Raytheon (the company Spencer worked for) in 1947.