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The Mechanism, Safety and Prospect of Microwave Oven AN-GELA LI, Collin College — GENERAL STATEMENT The microwave ovens have been accredited with their convenience, but also questioned for their safety. To understand if the current models of microwaves are adequate for household use, the researcher conducted a study in the heating mechanism of microwaves. The studies also provide the outlook for improvements and further microwave applications for green energy use. METHODS A number of experiments have been conducted, including the Melting Marshmallow, detecting the energy density field around a household microwave, and energy efficiency estimation of microwave versus other heating apparatus. Theory-wise, a relatively comprehensive research was performed on the the nutritious values of microwave cooked food. FINDINGS The microwave oven heating is produced by the friction between water and food molecules. The electric field inside the oven cavity can be modeled by the computer. Household microwaves are not threats to health due to negligible wave leakage. The microwaves have also evolved throughout the years. However, the uneven heating has been the main reason that downgrades the texture of the microwave cooked food. CONCLU-SION Microwave ovens are safe for household uses. As an efficient way of heating, microwave should be applied in a greater variety of fields. There are still technical challenges on directly increasing the quality of the microwave heated food.

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