

A Report on Outreach Programme on
“The Science in the Kitchen – Microwave Oven”
Organized by Department of Physics
on 30.10.2025



Report Submitted by: Dr. Charan Kuchi, Assistant Professor, Department of Physics.

Venue: ZP High School, CTM Village

Report Received on 03.10.2025.

Objective of the Lecture:

The main objective of the guest lecture was to introduce 10th standard students to the **scientific principles behind microwave ovens**, connecting everyday kitchen applications with the fundamental concepts of **physics, chemistry, and material science**. The session aimed to foster scientific curiosity and promote experiential learning by utilising familiar household technologies.

Session Overview:

The lecture began with an engaging introduction that highlighted how science is an integral part of our daily lives, particularly in the areas of cooking and food preservation. The session focused on explaining the basic principles behind the working of a microwave oven, emphasizing how microwave radiation (at 2.45 GHz frequency) interacts with water molecules in food to produce heat through dielectric heating and the vibration of polar molecules. The working mechanism of the oven was discussed in detail, covering its main components such as the magnetron, waveguide, and cooking chamber, and explaining how electromagnetic waves are generated and distributed to ensure efficient cooking. The lecture further explored the applications in daily life, highlighting the advantages of microwave ovens in achieving uniform and energy-efficient heating compared to conventional methods. Important safety and precautionary measures were also addressed, including the use of microwave-safe materials and avoiding the use of metals or sealed containers inside the oven. To enhance understanding, scientific demonstrations and visual illustrations from web sources were used to show the internal parts and operational process of a microwave oven.

The students showed great enthusiasm and actively participated by asking insightful questions related to the science of cooking, radiation safety, and energy conservation. The interaction effectively bridged the gap between theoretical learning and real-world applications.

Outcome of the Session:

Students gained a clear understanding of the scientific principles behind microwave ovens and their relevance to everyday life. The session successfully fostered scientific curiosity, critical thinking, and an appreciation for the application of physics.

Feedback from the School:

Teachers and school staff appreciated the practical and relatable nature of the talk, and the school authorities expressed their gratitude for the informative session. The guest lecture was highly successful in creating scientific awareness among school students. It highlighted how physics concepts operate behind common kitchen technologies, encouraging students to explore science in their everyday surroundings.