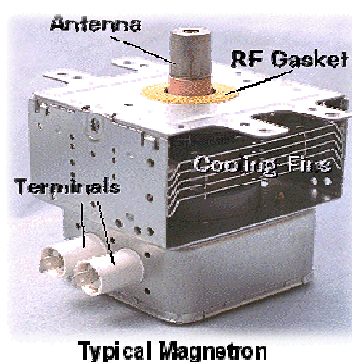


EXAMEN : BACCALAURÉAT GÉNÉRAL	SESSION 2011
ÉPREUVE : Évaluation spécifique de langue en section européenne	
PHYSIQUE-CHIMIE en langue ANGLAISE	SUJET N°11

MICROWAVE OVEN



Typical Magnetron

« Well you might say it's obvious - you just put the food in and it heats it up. But why does it heat the food yet it doesn't heat the dish, and why is the inside of the oven always cold? A **microwave oven** has in it a magnetron, which is a radio transmitter. If it was on a radio mast (don't try this) it would be able to send radio signals a long way. But it is inside a metal box which keeps the signal in. **The frequency of the transmitter is 2450MHz, which is a wavelength of 12cm**, that's why it's **micro waves**, rather than short waves (several metres), medium waves (hundreds of metres) or long waves (thousands of metres). There's a good reason for the frequency being 2450 Megahertz, which I'll explain. Food has a high percentage of water, and water is famously H₂O. The molecule of water has the O (Oxygen) in the middle, and the two H's (Hydrogen) stuck on it like Mickey Mouse ears at a particular angle (105°). The H's are positive and the O is negative, so the molecule has a + and - end. It has "polarity". Polarized molecules try to line themselves up with the electrical field, like compass needles trying to point at North. But because the electrical field is changing 2,450 million times a second the molecules don't quite have time to line up one way before they have to try to line up the other way! So, anything with water in it has all these molecules being moved this way and that by the electrical field, and heated up. »

Adapted from : <http://www.zyra.org.uk/microw.htm>

QUESTIONS

1. Present and comment on this document
2. Do not forget to focus on the type of waves involved in this process
3. Do you know any other uses for waves ?