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As a matter of fact, 96% of North American households have at least one microwave oven. There are several instances in our life where we would rely on microwave ovens for cooking convenience.

So, join me in pondering how often we use microwave ovens for anything from heating our breakfast to making our late-night saviors, Coffees.

Quite a lot right?

But my question for you all is, are we doing it right?

After microwaving, have you ever noticed that some part of your food is extremely hot, overcooked and dry while some part of your food is undercooked, wet and moist?

You know, this non-uniformity often ends up in an unpleasant eating experience.

But do you know that the shape of the container which you put inside your microwave oven is one of the major culprits behind this non-uniformity?

This is where I opened my microwave doors for research. We studied different geometrical containers resembling plates, bowls, stand-up pouches and take-out containers and we filled them with 1 lb of baby potatoes and microwaved them. During microwaving, we constantly monitored and measured the temperature of the potatoes within these packages.

So how did I do this? In our lab, we modified the microwave oven with fibre optic temperature measurement devices. These devices have the ability to measure the temperature of the food for every single second.

From our observations, we can determine how the packaging geometry and the arrangement of potatoes will affect the heat distribution.

So why did I use fibre optics? Well, we cannot use any metal-based detectors inside the oven unless I want to burn the whole lab down. We relied on fibre optics because they are microwave-safe and have high speed and accuracy in data collection.

From our observations, we found that arranging the potatoes in a plate or a rectangular tray provided more uniformly cooked product in shorter duration. But when we opted for a bowl or standup pouch the time taken by the microwave to cook the same amount of potato to the same level of uniformity has been increased by 2-3 times.

Our research will help the food industries in making a better packaging structures for microwavable foods and helps consumers like us to make informed decisions.

Remember, it's not just about what we eat anymore, it's also about in what we heat! So next time choose your container wisely and have a safe microwaving.

Thank you!