

## **SIK – the Swedish Institute for Food and Biotechnology**

### **Activity fields:**

The Department of Process Design and Technology Development at SIK – the Swedish Institute for Food and Biotechnology has a long tradition in the field of research and contract works in applications of microwave food processing, with pioneering work in the area since the late 1950'ies.

SIK is designing and validating microwave processes and systems, for food applications and related areas, including modelling-based design, construction of lab and pilot-scale systems for processing of a range of materials for different applications, ranging from proofing and baking of bakery products, heat treatment (e.g. pasteurisation and sterilisation of dairy products, particulate soups etc.), drying and decontamination of spices, pasteurisation of ready-made meals, drying of fruit products, vegetable products, mushrooms, tea leaves, swelling of starches and scalding of flour mixes to the bakery industry. SIK is also working closely together with industrial partners, including equipment suppliers for the food industry.

SIK has a long experience and extensive knowledge in methods for measuring dielectric properties of foods and other materials, with methods including cavity perturbation methods, retromodelling-based methods and coaxial probe methods. Dielectric-based methods are used for several purposes, e.g. for determination of dielectric properties of foods (as input to modelling-based design of microwave equipment and systems, but also to predict and validate different kinds of microwave processes). The concept of microwave reflectometry is also used for characterisation of food quality properties.

Recent work include pasteurisation and sterilisation of pumpable high concentrate particulate foods, combined microwave-convective/infrared baking of bakery products and tempering of meat and fish blocks from frozen, and decontamination of spices by microwave and IR technologies.

Much of the later work include pasteurisation and sterilisation of pumpable high concentrated particulate foods, combined microwave-convective/infrared baking of bakery products and tempering of meat and fish blocks from frozen.

The work has progressed to the point where microwaves are now industrialised. Industry is adapting several of the techniques developed.

### **Contact person**

Birgitta Wäppling Raaholt, research coordinator  
Department of Process Design and Technology Development  
SIK – the Swedish Institute for Food and Biotechnology  
Box 5401  
SE-402 29 GÖTEBORG  
SWEDEN  
Tel: +46 (0)10-516 66 57  
Fax: +46 (0)31-83 37 82  
email: [br@sik.se](mailto:br@sik.se)  
[www.sik.se](http://www.sik.se)