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**FACULTY OF
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VIII

**ENGINEERING, ENVIRONMENT AND MATERIALS
IN PROCESS INDUSTRY
EEM2023**

BOOK OF ABSTRACTS



**JAHORINA
MARCH 20-23, 2023**

**REPUBLIC OF SRPSKA
BOSNIA AND HERZEGOVINA**

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FACULTY OF TECHNOLOGY ZVORNIK**



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FOOD STRUCTURE AND TEXTURE: INDUSTRIAL RELEVANCE AND MEASUREMENT TECHNIQUES

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Abstract

One of the most important properties of solid foods is texture, which corresponds to a set of physical properties, perceived by human senses such as audition or touch. These properties are linked to the internal structure of the material, this in turn being determined by the molecular interactions of its constituents. Cells play an important role in the structural characteristics of a food. For example, plant cells are surrounded by a cell wall that determines cell shape and intercellular cohesion, providing mechanical strength and rigidity, thereby defining the texture of plant foods. Additionally, texture is also associated with food composition. Among foods' components, starch is one that most contributes to texture changes. Starch is a relevant component in a diversity of bakery products, which are an important sector of the food industry globally and are part of regular diets of many people.

Hardness is a physical property of the material that is most used in texture evaluation. It is often fundamental in the quality of the product and can be decisive in its acceptability by the consumer (ex: crispy chips or soft bread). Besides the relevance for consumer acceptance, texture is also highly important in a more technological/industrial perspective. Some examples of the industrial relevance of texture include prevention of mechanical injuries to fruits all the way along the supply chain; selection of raw materials destined for processing, especially freezing, drying or canning; quantification of changes due to industrial food processing; in product development and in quality control.

There are two types of approaches used to assess food texture: through instrumental methods or by sensorial analysis. Instrumental methods encompass the measurement of the physical properties using equipment, like penetrometers or texturometers. They allow the quantification of a wide variety of textural properties, including hardness. In contrast, sensory tests are carried out by a number of panellists/judges, with or without training, in a tasting room, following standardized procedures. Since the information provided by both types of tests is complementing in many situations both are carried out and the correlation between sensory and instrumental texture is investigated, like in product development. When it comes to industrial processing, instrumental texture analysis is the viable option, for being easier, cheaper and faster. This work presents some case studies that evaluate textural properties in a diversity of bakery products, by both, instrumental measurements as well as sensorial evaluations.

Key words: *food processing, textural properties, industrial process, bakery products*

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