# Application of Human Mastication Measurements on Food Texture Analysis

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Mastication (chewing) is the oral process preceding deglutition (swallowing) and known as the first step of the digestion. It is considered to be an unconscious and automatically controlled process as human adults exhibit their own rhythmical mastication behavior. Different foodstuffs show various changes in the oral cavity during mastication, and healthy humans can modify their habitual masticatory patterns to be suitable for food texture.

To monitor such physical changes occurring in the mouth, non-invasive measurements of human mastication have been introduced recently. A number of masticatory parameters are obtained from electromyography (EMG) of the masticatory muscles and/or mandibular kinematics, and in-mouth bite-force measurement during eating. I believe that these human mastication parameters are useful to link the textural characteristics subjectively assessed by sensory evaluation with physical or rheological parameters objectively measured by a rheometer.

I will present some of our recent results on solid foods with various textures evaluated by EMG-activities or bite force. The topics are texture effect on bite force pattern for solid foods involving cheese, one-mouthful amount and texture effects on EMG parameters for some rice products, simultaneous measurement of EMG with time-intensity (T-I) assessment of panelist to detect temporal texture and flavor release of confectionaries, and others. I will also discuss about mechanical properties that strongly influence human mastication behavior and those that do not significantly change mastication method of humans.