Chewing Simulator Provides Sensory Information

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Category
Engineering & Physical Sciences/Instrumentation, Sensors & Controls
Engineering & Physical Sciences/Materials
Engineering & Physical Sciences/Robotics
Life Sciences/Research Tools
Agriculture & Veterinary/Food Science & Nutrition

Sensory information on chewing experience

Artificial Resynthesis Technology (ART-5) is a mechanical mouth that tests food products and dental materials by simulating the mechanics of the human chewing process. It provides information on the environmental conditions found in the human mouth. The chewing machine or artificial mouth has a computerized feedback control that mimics the human chewing motion, especially its ability to adjust chewing speed and path in response to food texture. The device provides sensory information on appearance, sound, texture, smell and taste for evaluating food products. The device also tests wear patterns for dental materials and orthodontic appliances.

Watch these videos to see the device being used in the lab:

- Dental Chewing Machine
- Chewing Robot at the University of Minnesota

Reproduces human chewing motion

Although equipment exists to measure food parameters such as hardness and stickiness, currently there are no all-encompassing machines which reproduce the human chewing motion and provide multi-sensory information. Originally designed for assessing dental/orthodontic materials, ART-5 provides fast, objective, reproducible and quantitative measurements on food texture and other sensory parameters. It can reduce the costs associated with panel tasting, and speed up the design, optimization and introduction of new food formulations.

Phase of Development

- Research grade prototype developed.

Benefits

- Provides sensory information on appearance, sound, texture, smell and taste of food products
- Provides feedback on the five major human senses

Features

- Chewing machine with computerized feedback control
- Mimics the human chewing motion
- Adjusts chewing speed and path in response to food texture

Applications

Learn more

- Dental material evaluation
- Orthodontic appliance evaluation
- Food product evaluation
- Food manufacturing
- Food testing

Researchers

Alex Fok, PhD, MSc

Professor, Restorative Sciences (Dental School)

External Link (www.dentistry.umn.edu)

Ralph DeLong, PhD, DDS, MS

Professor Emeritus, Restorative Sciences (Dental School)

External Link (www.dentistry.umn.edu)

Publications

What food companies learn from a smart-mouthed robot

Marketplace, February 15, 2016

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