

การพัฒนาผลิตภัณฑ์อาหารด้วย
FOOD STRUCTURING APPROACH


A. Fuongfuchat, N. Seetapan, C. Gamonpilas, P. Methacanon,
 W. Pongjaruwat, N. Limprayoon, and T. Makmoon

NATIONAL METAL AND MATERIALS TECHNOLOGY CENTER **MTEC**
 a member of NSTDA


www.softmatter.org Volume 4 | Number 8 | 1 August 2008 | Pages 1541–1720

Food: Complex System


Food: complex mixtures of water, biopolymers, low molecular weight ingredients and colloidal particles.




white sauce




cheese




ice cream



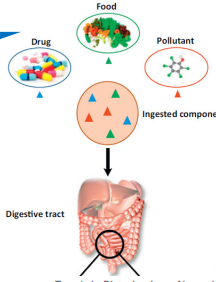
Food Structure



Food Texture



Processability




Bioavailability

© MTEC 2012
www.mtec.or.th

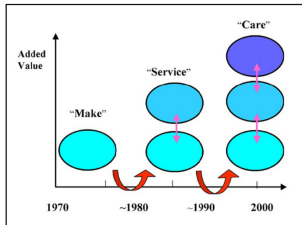
MTEC Platform Technology

Trends in Biotechnology, November 2012, Vol. 30, No. 11



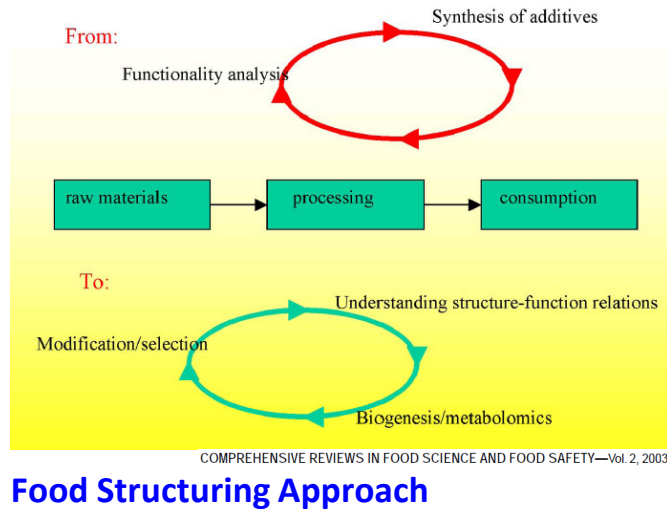
2

Technology Trends in Food Development

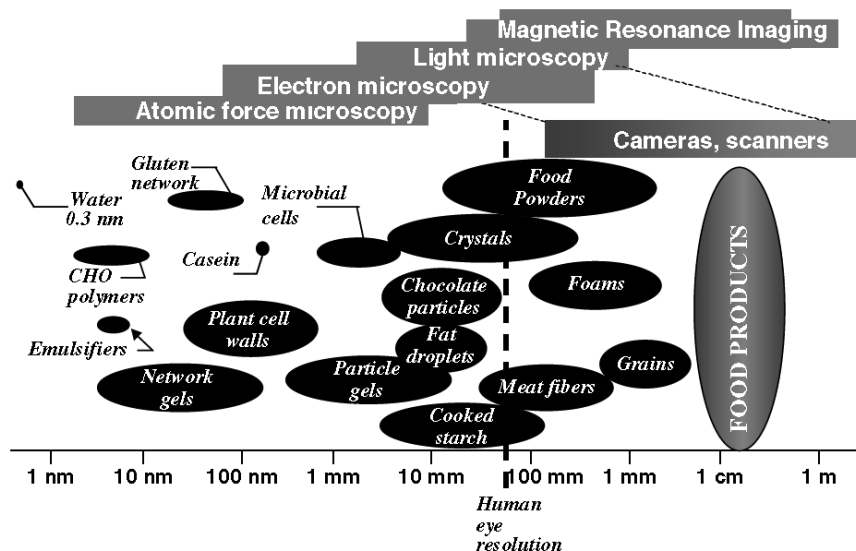


Food Processing + Sensory + Health: Oral Processing + Digestion + Nutrition

more than Food Processing and Texturization



Food Structure: macro – molecular scale



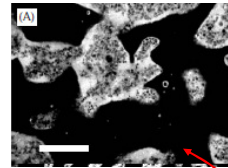
Food Structuring



Food



- Lipid droplet
- Protein
- Sugar
- Thickening agent

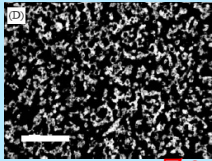


Food Structure

Co-continuous morphology

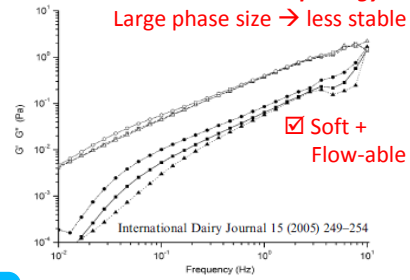
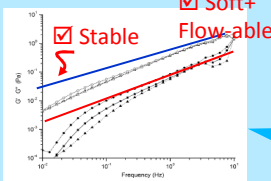
Large phase size → less stable

Co-continuous morphology
Small phase size → stable



Requirement:

- Soft Texture
- Flow-able
- Stable



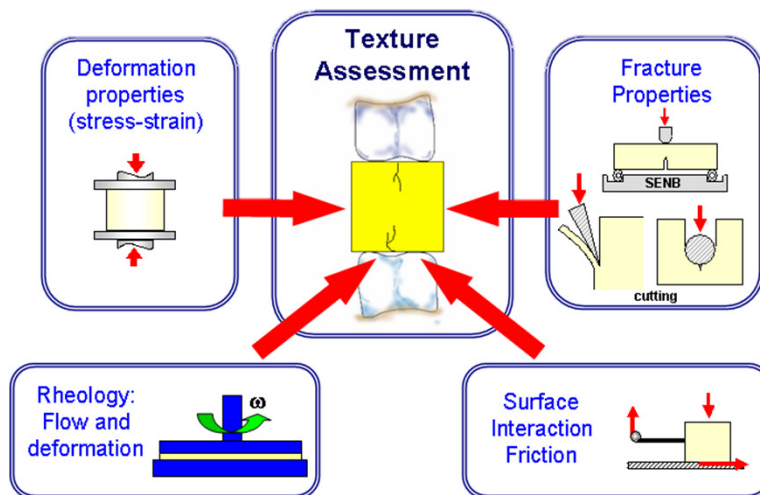
Rheology

(Study of Deformation & Flow)

By adding hydrocolloids to adjust phase size

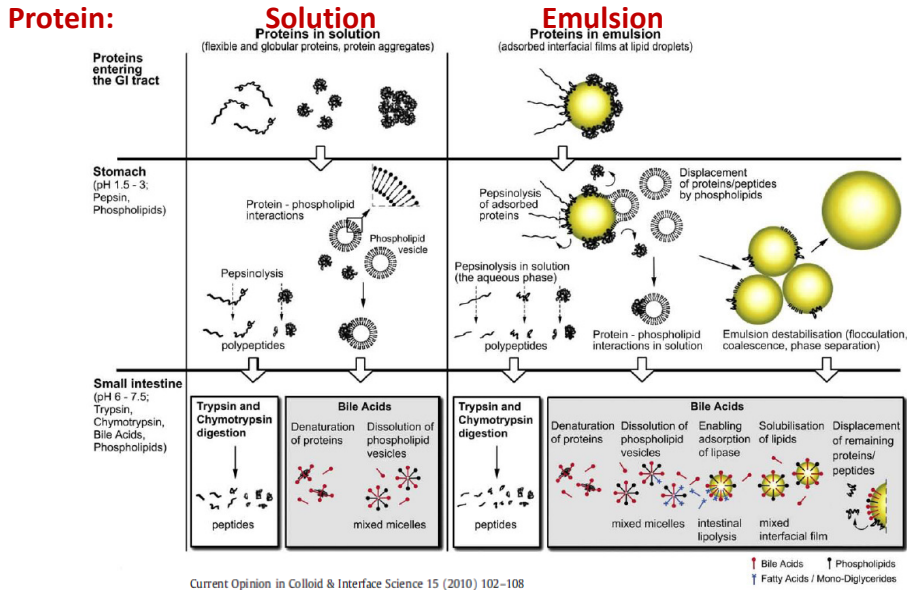
Food Texture Assessment

Rheology/Mechanical Testing



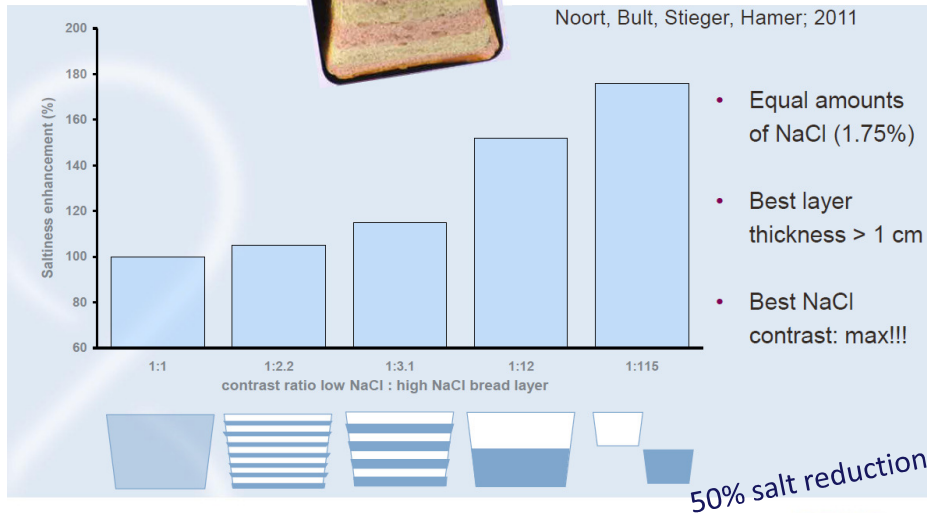
Adapted from Goh (2005)

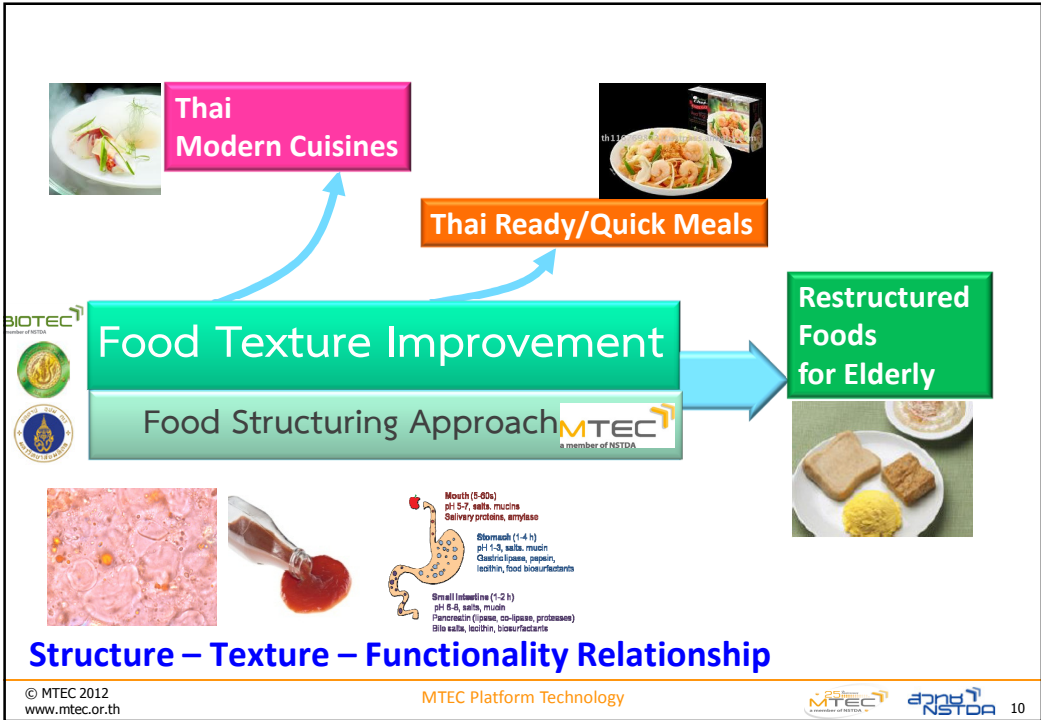
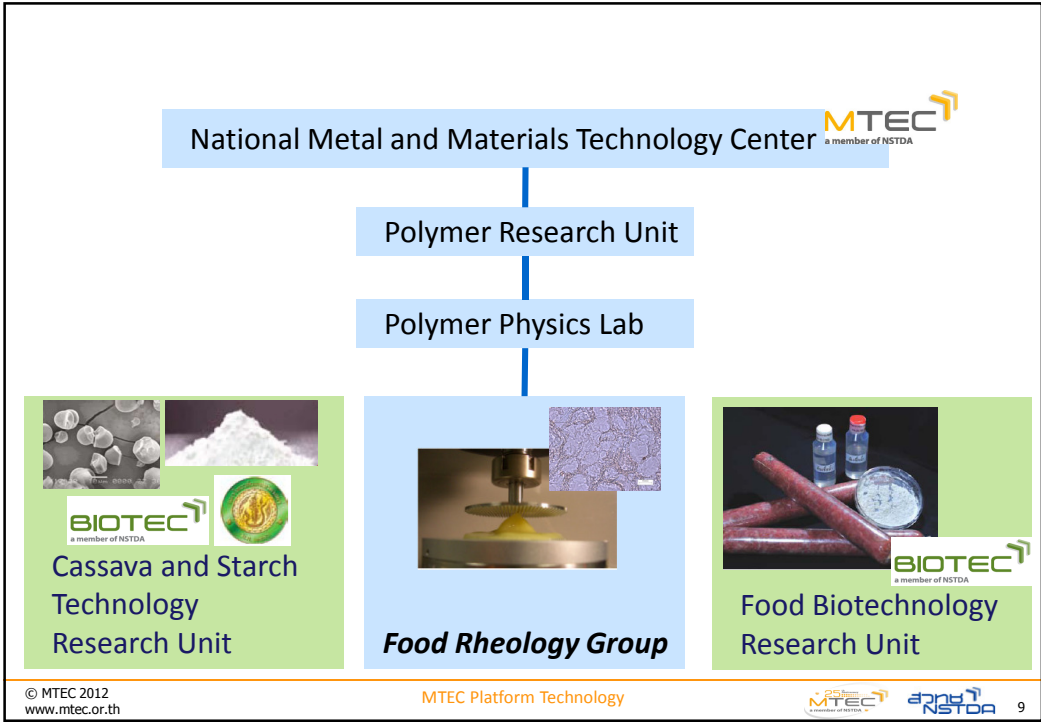
Example 1



Example 2

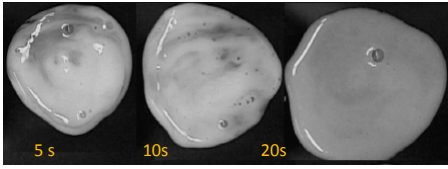
เกลือน้อย แต่เค็มพอดี



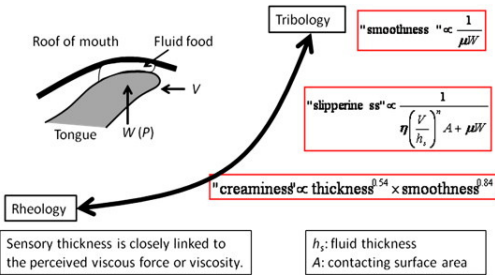


Structure – Texture – Functionality Relationship

Oral Processing - Digestion



Food Hydrocolloids 20 (2006) 24–34



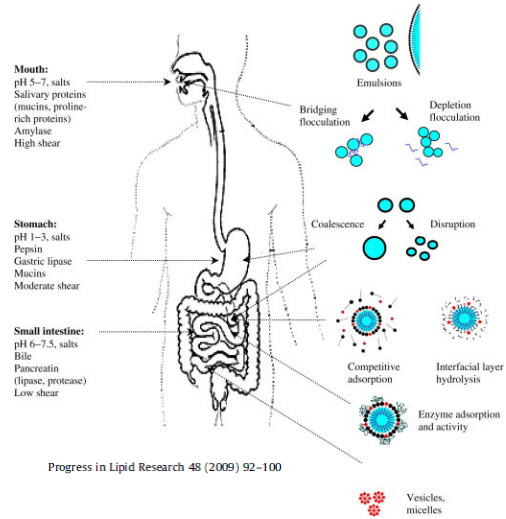
Trends in Food Science & Technology
Volume 25, Issue 1, May 2012, Pages 4–12

© MTEC 2012
www.mtec.or.th

MTEC Platform Technology



11



ชุดโครงการการพัฒนาคุณภาพอาหารไทย

โดยใช้ศาสตร์ด้านรีโวลอยี่



Thai Ready Meals

Thai Modern Cuisine

Food Texture Improvement

© MTEC 2012
www.mtec.or.th

MTEC Platform Technology



12



Thank you

Nattawut, Chaiwut

Asira, Phatchareeya, Waranit, Thidarat, Jaruwat, Nispa, Pawadee

National Metal and Materials Technology Center (MTEC)

National Science and Technology Development Agency

114 Thailand Science Park

Phahonyothin Road, Klong 1

Klong Luang, Pathumthani 12120

Thailand

asiraf@mtec.or.th tel: 025646500 ext 4441