



2-day Intensive Workshop in BANGKOK on

PLASTIC PACKAGING AND THE SHELF LIFE OF FOOD

November 26-27, 2014

By

The Department of Packaging and Materials Technology (PKMT),
Faculty of Agro-Industry, Kasetsart University



Venue : La Ong Far Seminar room, Amorn
Phumilrattana building, 3th floor,
Kasetsart University

Speaker: Professor Gordon L. Robertson

*The workshop will be presented by **Professor Gordon Robertson** who is a consultant in food packaging and adjunct Professor at the University of Queensland in Australia. His best-selling book **FOOD PACKAGING: PRINCIPLES & PRACTICE 3rd edition** (USD 99.00) was published in 2013. Seven chapters from this book form the course notes for the workshop.*

PLEASE RESERVE YOUR SEAT NOW, ONLY 30 SEATS ARE AVIALABLE!!!

The program:

Few of those working in the food and packaging industries have had formal education in food packaging. Decisions about which polymer to choose or what the effect on shelf life will be if a change is made in package dimensions or polymer type are often based on trial and error or intuition. This course is an attempt to fill that gap with respect to plastic packaging by discussing the basic principles behind polymer selection, deteriorative reactions in foods and shelf life. The properties of the newer biobased polymers such as PLA and PHA will also be discussed.

The workshop will provide attendees the opportunity to construct connections between food chemistry, packaging design and polymer science to expand their knowledge base and compe-

tence. Participants will identify key packaging decision-making processes and will validate their new knowledge to reframe package challenges and make successful food packaging decisions. There will also be an opportunity to discuss your own real shelf life examples.

Learning Objectives:

- To understand the properties of the key plastic polymers available for food packaging;
- To comprehend the major plastic processing methods;
- To appreciate the key deteriorative reactions which determine end of shelf life;
- To solve food packaging challenges in package design and plastic material selection;
- To justify and appraise package design and plastics material selections as related to shelf life.

Programme:

This workshop will begin with an overview of the structure and related properties of plastic polymer structures including biobased and/or biodegradable plastics. This will be followed by a session on plastic polymer processing and converting. The final session of day one discusses the permeability of plastic polymers and includes real life calculations of permeability and transmission rates (please bring a scientific calculator).

The second morning begins with an overview of the key deteriorative reactions in foods. Definitions of shelf life follow and then shelf life determination from the product side is discussed. In the afternoon session, microbial shelf life and accelerated shelf life testing will be presented, followed by a discussion of real life examples and case studies including those from attendees.

The Presenter:

The workshop will be presented by **Professor Gordon Robertson** who is a consultant in food packaging and adjunct Professor at the University of Queensland in Australia. His best-selling book **FOOD PACKAGING: PRINCIPLES & PRACTICE 3rd edition** (USD 99.00) was published in 2013. Seven chapters from this book form the course notes for the workshop.

Professor Robertson has run food packaging workshops in over 10 countries to more than 500 people. The book **FOOD PACKAGING & SHELF LIFE** which he edited and contributed two chapters, was published in the USA in 2010.

Prior to his present positions, Professor Robertson was Vice President for Environmental & External Affairs in the Tetra Pak Asia Regional Headquarters for 11 years, and before that Foundation Professor of Packaging Technology at Massey University, New Zealand where he taught courses on food packaging for 21 years.

Professor Robertson is a Fellow of the International Academy of Food Science & Technology, a Fellow of the US Institute of Food Technologists and a Fellow of the Australian Institute of Packaging. More information on his background can be found on his website: <http://www.gordonrobertson.com>.

Who Should Attend?

This course is especially targeted at food packaging technologists, food industry R&D staffs, packaging manufacturers and regulatory scientists. Technical marketing staff and university lecturers in food packaging will also find this course beneficial.

Program

DAY 1:

08:30 *Registration*

09:00 Welcome and introduction

09:05 **Functions and Environments of packaging**

Functions/Environment grid

Packaging innovation

09:45 **Structure and related properties of plastic polymers**

Classification of polymers

Molecular weight

Density

Crystallinity

Physical transitions

10:15 *Coffee Break*

10:45 **Chemical structure and key properties**

1. Polyolefins

2. Copolymers of ethylene

3. Substituted olefins

4. Polyesters

5. Polycarbonates

6. Polyamides

7. Acrylonitriles

8. Additives in food plastics

11:30 **Biobased/biodegradable food packaging materials**

Thermoplastic starch (TPS)

Polylactate (PLA)

Poly(hydroxyalkanoates), e.g. PHBs & PHVs

Polyglycolic acid (PGA)

Polyethylene furanoate (PEF)

Regenerated cellulose

12:30 *Lunch Break*

13:30 **Processing and converting of thermoplastic polymers**

Extrusion, coating and laminating

Vapour deposition

Nanocomposites

Orientation

Injection and blow moulding, Thermoforming

14:45 *Coffee Break*

15:15 **Permeability of thermoplastic polymers**

Solution; diffusion; permeation

Permeability coefficient units

Units and real life calculations (scientific calculator required)

Polymer/permeant relationships

Variables of the polymer

Effect of temperature
Transmission rates (WVTR & OTR)
Converting transmission rates to permeability
Permeability of multilayer materials
Measurement of permeability

16:45 *Close of Day 1*

DAY 2:

08:30 *Registration*

09:00 **Deteriorative reactions in foods**

Enzymic, Chemical, Physical, Biological
Rates of deteriorative reactions
Zero-order
First-order
Microbial growth
Intrinsic factors controlling reaction rates
Water activity & moisture sorption isotherms
Oxidation-reduction potential
Extrinsic factors controlling reaction rates
Temperature
Gas atmosphere (MAP)
Light

10:15 *Coffee Break*

10:45 **Shelf life of foods**

Definitions
Shelf life determination
Critical factors and indices of failure (IoF)
Cutoff point (COP)
Influence of packaging material
Determining shelf life from the product side:
Product characteristics
Package properties
Distribution environment

12:30 *Lunch Break*

13:30 Predicting microbial shelf life
Accelerated shelf life testing (ASLT)
Determining shelf life from the consumer side

14:45 *Coffee Break*

15:15 **Practical examples and discussion of shelf life**

Real life examples/case studies including from attendees

16:45 *End of workshop*

Course Text: Food Packaging: Principles & Practice (3rd edition) CRC Press, 2013 (*Seminar handouts will be provided during the workshop. Attendees who would like to order for the book "Food Packaging: Principles & Practice" please inform the seminar team and we can help order the book for you at a discount rate from the publisher*)

REGISTRATION FORM

2-day Intensive Workshop in BANGKOK on **PLASTIC PACKAGING AND THE SHELF LIFE OF FOOD**

By: Professor Gordon L. Robertson

November 26-27, 2014

Venue: La Ong Far seminar room, Amorn Phumilrattana building,
3th floor, Kasetsart University

ห้องประชุม ละอองฟ้า ชั้น 3 อาคารอมรภูมิรัตน์

ชื่อ-นามสกุล (NAME)

หน่วยงาน (INSTITUTION/COMPANY)

ที่อยู่ (ADDRESS)

โทรศัพท์ และ โทรสาร (PHONE and FAX)

อีเมล (E-MAIL)

Payment information

5,800 Baht/person for 2-day

(Government staffs and students 5,200 Baht/person for 2-day)

Bank transfer

Bank of Ayudthaya (Kasetsart University Branch)

Account name: Agro-Industrial Technology Service Unit

Account Number: 374-1-49269-8

Swift code AYUDTHBK (For international bank transfer)

Account type: Saving

Please fax the complete information along with transfer slip to

Khun Sukanya Majaroen at Fax no. +662 -562-5046,

Phone no. +662-562-5045, +6684-155-2859

Email: fagisym@ku.ac.th and pkmt@ku.ac.th

For more information, please contact:

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Venue Map

แผนที่ สถานที่จัดสัมมนา

ห้องละอองฟ้า อาคารอมรมภูมิรัตน สถาบันคั้นคว่ำและพัฒนาผลิตภัณฑ์อาหาร

La Ong Far Seminar room, Amorn Phumilrattana building, Kasetsart University

