Active and Intelligent Packaging

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Session
Overview
- What do we mean by smart packing?
- Types of packaging available
  - Active packaging
  - Smart or intelligent packaging
  - Use case examples
- Closing thoughts

Smart Packaging
Why are we looking to use this?
- Enhance the customer experience
  - Add value in some means
- Improving the product
- Quality control about the product
- Additional information

Active Packaging
Overview
- Enhance performance of the product
  - Interact directly with the product
  - Food applications
- Manufactured into the packaging materials
- Printed or coated

Oxygen Absorbers
Why do we use
- Extend shelf life
- Reduced growth of pathogens
- Improved product quality
- Reduced oxidation
  - Vitamins, spices...
- Extend pharmaceutical life
Moisture Absorption

Active Packaging

- Applications include
  - Pharmaceutical
  - Electronics
  - Food applications
- Materials
  - Sachets: Silica gels, calcium oxide ...
  - Sheets: Multi layer with superabsorbent polymers
    - Polycrylate salts. Starch copolymers ....

Thermochromic Inks

What Temperature is the Product At?

- Color change inks
  - Indicate the current temperature
- Food products
- Drinks and for promotions
  - Fanta “Funstigator”

Active Packaging

Some additional examples

- Ethylene absorbers
  - Strawberries
- Releasing elements
  - CO₂, preserving agents
- Antimicrobial
  - Silver applications for office, electronics ...
- Heating elements
  - Metals for microwaves

Smart (Intelligent) Packaging

Overview

- Indicator on packaging
  - Internal or external
- Monitor the product and provide information
  - Quality
  - Change
  - History
- Communicate

Time Temperature Indicators (TTI)

Also referred to as Time Temperature Integrators

- Temperature over time
  - Warning above/below set temperature
  - Color change over time
- Partial or full history
  - Different solutions available
  - Different activators

Oxygen / Carbon Dioxide

Smart Packaging

- Oxygen sensors
  - Detect leaks in packaging
  - Issue with responsiveness
  - Microbial action
- CO₂ indicators
  - React to changes in pH
  - Used in meats ....

www.multisorb.com
Shock Indicators
Labels, circuits or sensors

- Look at shocks or impacts
  - Record over time
  - If pre-determined value exceeded
- Delicate materials
  - Shipping, handling and use

Interacting With Packaging
Customer Use of NFC (RFID from a producer)

- Utilize NFC enabled device
  - NFC tag
- Provide added value to the consumer
  - Growth worldwide in linking packaging with mobile

Chateau Le Pin
NFC integrated into wine labels

- Reliable anti counterfeiting solution
  - $3,000 average, up to $10,000
- Evaluated many technologies
- Linked the ID to the bottle and customer
  - Encrypted
- Created added value
  - Details of wine, virtual cellar, notes on wine etc.

MIT
Research published using NFC

- Sensors connected to NFC tags
  - NFC tag adapted to detect the chemical using carbon nanotubes
  - Simple scan with phone
  - Used either by manufacturer or customer

Smart Packaging
Growth for Communication

- Integrating RFID/NFC communication into packaging
- Added functionality to the user
  - Instructions
  - Interactive guides
  - Additional content
  - Promotions
  - Live updates

Smart Packaging
Closing thoughts
Thanks for listening!

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