

Food Color and Measurement Techniques

Color

- How is the quality of food products measured ?
 - different parameters for the collection of data
 - Color, texture, taste, and smell....
- Measuring color quality in food goes far beyond what the human eye perceives

Color

- ✓ Color is the first characteristic that consumers rely on when testing quality of their food products
- ✓ Definition of «color»
- ✓ Sensory color analysis
- ✓ Quantitative color analysis

Factors affecting color

- ✓ Chemical composition
- ✓ Effect of lighting
 - ✓ *Correlated Color Temperature*
 - ✓ Warm white
 - ✓ Neutral white
 - ✓ Cool white
 - ✓ *Color rendering index*
- ✓ **Interaction of color with other senses**

Color measurement

- ✓ Instrumentally with colorimeters
 - ✓ tristimulus colorimeter
 - ✓ spectrophotometers
- ✓ The difference between spectrophotometers and colorimeters

Tristimulus colorimeter

- ✓ Light source
- ✓ 3 glass filters (X, Y, Z)
- ✓ Photocell

Color

- ✓ Hue, chroma and value (lightness)
- ✓ *opponent-colors theory of color vision*
- ✓ **Scales for Measuring Color**
- ✓ **The Munsell Scale**
- ✓ The CIE Commission Internationale de l'Eclairage (International Commission on Illumination) **Color Systems**

Expressing Colors

- **CIELAB ($L^*a^*b^*$)**
- ✓ When a color is expressed in CIELAB,
 - ✓ L^* denotes lightness
 - ✓ a^* denotes the red/green value
 - ✓ b^* denotes the yellow/blue value
- ✓ **Delta CIELAB and CIELCH**

Expressing Colors

- ✓ Hunter L, a, b to CIE L*a*b*
- ✓ The Lovibond system