Daily Chemistry

Marfuatun, M.Si.
Objective

- Student are able to analyzing chemicals in cosmetics, food, and daily materials.
- Student are able to make chemistry experiment for kids (preschool – elementary school)
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Chemistry in Daily Life

- Human Body
- Cleansing Product
- Cosmetics
- Foods
Cosmetics

Marfuatun
What is a cosmetic?

- Cosmetic is a substance or preparation intended for placement in contact with any external part of the human body' (this includes the mouth and teeth).

- Kostemik adalah sediaan atau paduan bahan yang siap untuk digunakan pada bagian luar badan (epidermidis, rambut, kuku, bibir, dan organ kelamin bagian luar), gigi, dan rongga mulut untuk membersihkan, menambah daya tarik, mengubah penampilan, melindungi supaya tetap dalam keadaan baik, memperbaiki bau badan tetapi tidak dimaksudkan untuk mengobati atau menyembuhkan suatu penyakit (Permenkes)
Ingredients

Core ingredients:
- Water
- Emulsifier
- Preservative
- Thickener
- Emollient
- Colour
- Fragrance
Emulsifiers

- Emulsifiers refers to any ingredient that helps to keep unlike substances (such as oil and water) from separating
- These materials are able to reduce the surface tension of water
- Example: Polysorbates, laureth-4, and potassium cetyl sulfate
Preservative

- Preservatives are added to cosmetics to extend cosmetics shelf life and prevent the growth of microorganisms such as bacteria and fungi
- Example: parabens, benzyl alcohol, salicylic acid, formaldehyde, tetrasodium EDTA
Thickener

- Thickening agents work to give products an appealing consistency
- Chemicals:
  - **Lipid thickeners**: cetyl alcohol, stearic acid and carnauba wax.
  - **Naturally derived thickeners**: hydroxyethyl cellulose, guar gum, xanthan gum and gelatin
  - **Mineral thickeners**: magnesium aluminium silicate, silica and bentonite.
  - **Synthetic thickeners**: The most common synthetic thickener is carbomer, an acrylic acid polymer. Other examples include cetyl palmitate, and ammonium acryloyldimethyltaurate.
Emollient

- Emollients soften the skin by preventing water loss
- Example: beeswax, olive oil, coconut oil and lanolin, as well as petrolatum (petroleum jelly), mineral oil, glycerine, zinc oxide, butyl stearate and diglycol laurate.
Colouring Agents

- Mineral ingredients can include iron oxide, mica flakes, manganese, chromium oxide and coal tar.
- Natural colours can come from plants, such as beet powder, or from animals, like the cochineal insect.
- Example:
  - **Iron oxide**: yellows, reds and black
  - **Chromium oxide**: green pigments
  - **Titanium oxide** and **Zink oxide**: white
Fragrance

- There are 3 main parts in fragrance:
  1. Head notes consist of small, light molecules that evaporate quickly
  2. Heart notes are medium-sized molecules that begin to emerge after much of the head notes have evaporated
  3. Base notes are large, heavy molecules that take the longest to evaporate, lingering on the skin for many hours