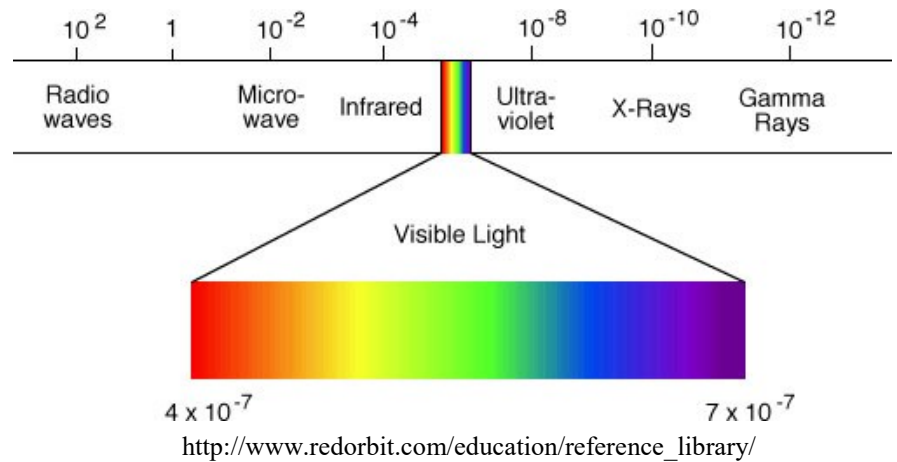


# NNCI—Nanoscale Science and Engineering Detecting Ultraviolet Radiation (UV)

## What is UV light?

UV is a small portion of the energy given out from the sun or that portion of the electromagnetic spectrum between x rays and visible light (between 40 and 400 nm)



## Can UV radiation be blocked or filtered?

Protection from UV is provided by clothing, polycarbonate, glass, acrylics, plastic diffusers used in office lighting, and sun-blocking lotions.



Protects cells from damages that cause skin cancer.

<http://www.skincancer.org/prevention/sun-protection/sunscreen>



Protects medicine from effects of UV.

<http://www.weiku.com/products/9898821/>

## How can UV radiation be detected?

UV beads have a chemical substance embedded into the plastic that will change color when exposed to UV radiation.



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## Know Your Sunscreens

It is important to protect your skin from damaging UV radiation

Do you know what kinds of radiation are harmful to your skin?

Three forms of UV arrive from the sun but only two are cause for concern.

### UV blocking agents are in a colloidal suspension

Two kinds of active ingredients (block UV radiation)

#### ●Organic

- Carbon based
- Good UVB absorber
- Avobenzone (Parasol 1789) only approved UVA blocker

#### ●Inorganic

- Metals—Zn and Ti
- Absorb UV range from 200nm—400nm  
380nm

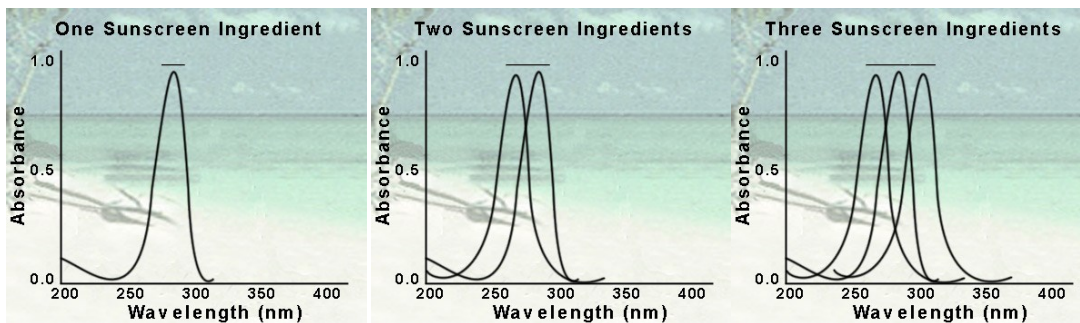
### Skin damage:

UVC—absorbed by the ozone layer

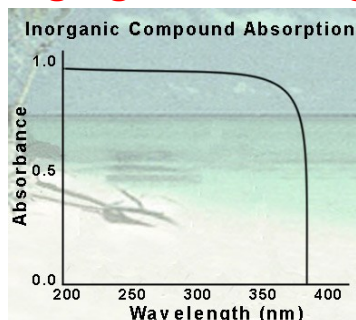
UVB—causes most damage—sunburn

UVA—penetrates deeper and causes long term damage—aging & skin cancer

### Organic blocking agent UV range



### Inorganic blocking agent UV range



From <http://www.aims.gov.au/pages/research/projects/sunscreens/pages/sunscreens02.html>



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