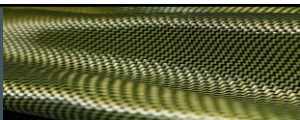
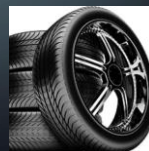
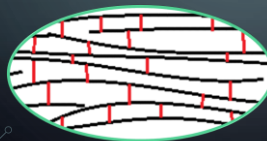


## DESIGNER POLYMERS



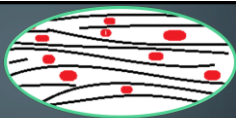
## REVIEW

- Cross-links: Connects polymer chains together.
- Makes Rubber harder and stronger.



## REVIEW

- Plasticisers: Oily Liquid, goes between Polymer chains.
- Makes plastic more flexible.



## DESIGNER POLYMERS

- Scientists can **design polymers** that make our lives easier.
- They can change the **amount of molecules** to change the polymer's **properties**.



## DISCUSS WITH YOUR PARTNER

- If you could design a polymer, what **properties** would it have? Why?

## CLING FILM (SARAN WRAP)

- Sometimes made with plasticised PVC (Polyvinylchloride)
- Can also be made with polythene



## DISCUSS WITH YOUR PARTNER

- What are some **benefits (good points)** of using cling film?
- What are some **bad points** about using cling film?

### Good Points

- Protects your food
- Keeps food fresher for longer

### Bad Points

- Not always recyclable
- Can harm animals if eaten

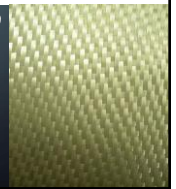
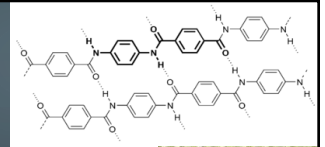
## CLING FILM

- When cling was first made, people thought the plasticisers would go through the plastic into food.
- People thought that this would make them sick.



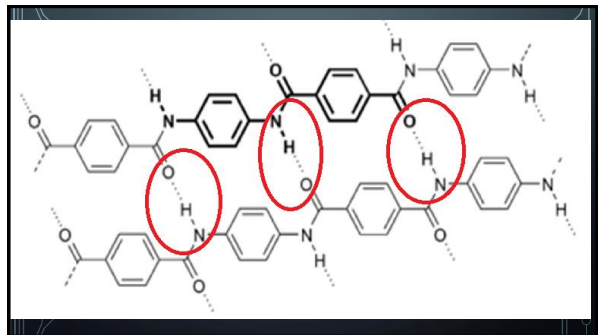
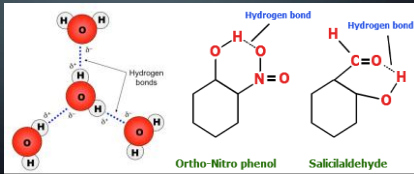
## KEVLAR

- Strong, light-weight polymer
- **High** Melting Point
- Very **long** molecules, linked together in **sheets**



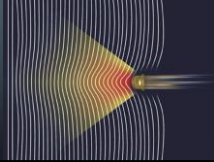
## KEVLAR

- Forms Hydrogen Bonds
- Some of the strongest bonds between molecules.



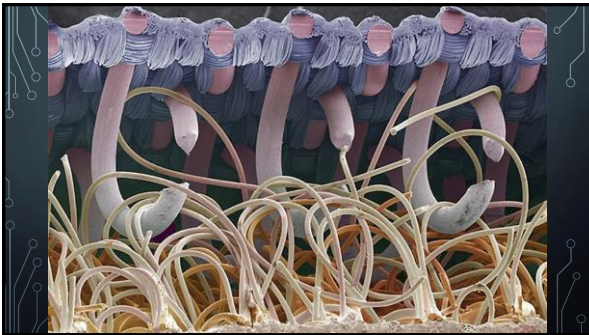
## KEVLAR

- **5 X (times)** stronger than steel
- Used to make **bullet proof** vests



## DISCUSS WITH YOUR PARTNER

- Soldier's armour used to be made with **metal**, now they are made with Kevlar.
- Why is Kevlar a **better** material for this purpose?



## VELCRO

- Inventor copied **seed pods** that stuck to his sock.
- Used **Nylon** to make Velcro.
- Found a way to make the hooks go into the loops.

