

A Novel, Eco-friendly Synthesis of Reduced Graphene Oxide from Durian Rind and Sugarcane Bagasse for Water Filters

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Issue: Water Pollution!



Over **2 BILLION** people drink polluted water (WHO, 2017)

Water pollutants cause serious health damage!

Heavy Metal Ions

Kidney Failure
Brain Damage

Organic Dyes

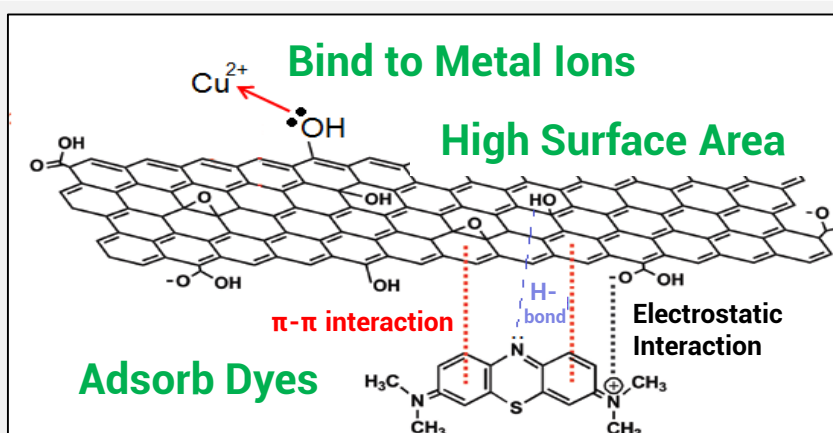
Abdominal Pain
Gastritis



Pollutants found in both **developed** and **developing** countries!



Solution: Reduced Graphene Oxide (rGO)



Great Potential in Water Purification!

Our Novel & Eco-friendly Method



Use **Cellulose** from **durian rind** and **sugarcane bagasse waste** to synthesize rGO!

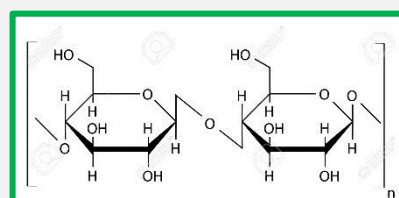
However, current synthesis of rGO:

Hummer's Method

Expensive and sophisticated

Release toxic gases

Harmful to environment

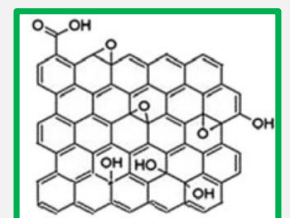


Cellulose

Ferrocene



Oxidation +
Reduction



rGO

Conclusion

- Durian rGO is **highly effective** and **cost effective** in removing Cu^{2+} and methylene blue
- Durian rGO **removed more copper(II) ions** than commercial activated carbon!



Applications

Durian rGO have both domestic & industrial uses



rGO MCE Filter



rGO Column Filter