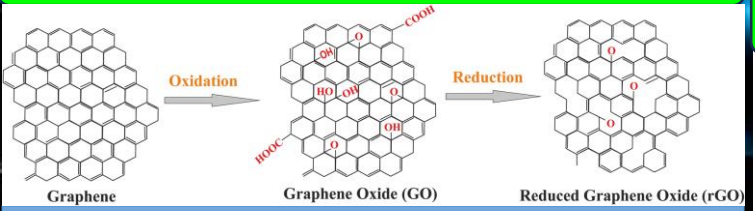
39th IACDE National Conference

A CARBON ALLOTROPE – RECASTING THE FUTURE

Graphene is the thinnest and strongest material in existence.
Mainly composed of 2D sheets less than 10 nm thick.
This sheets are made up of SP^2 hybridized carbon atoms that are bonded in a Honey comb-like pattern.

Novoselov and Geim isolated it for the first time in 2004. In 2010, they were honored with the Nobel Prize.

Structure of graphene and its derivatives

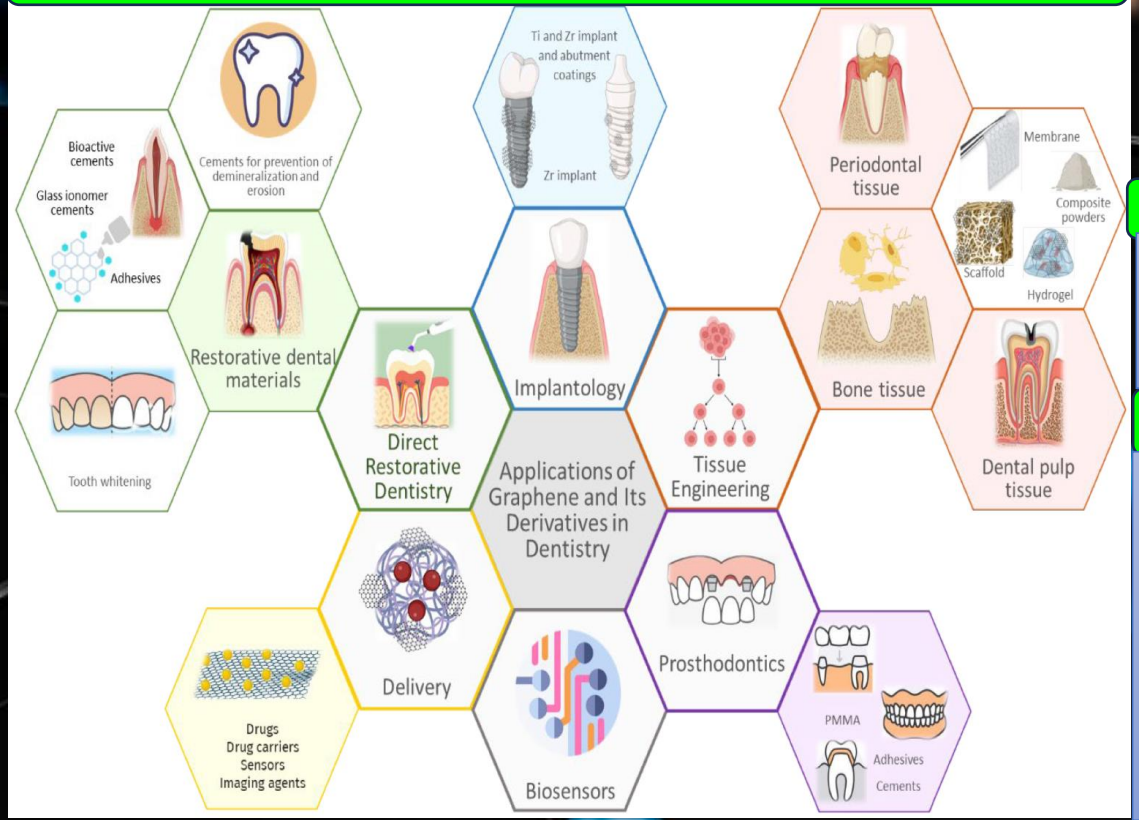


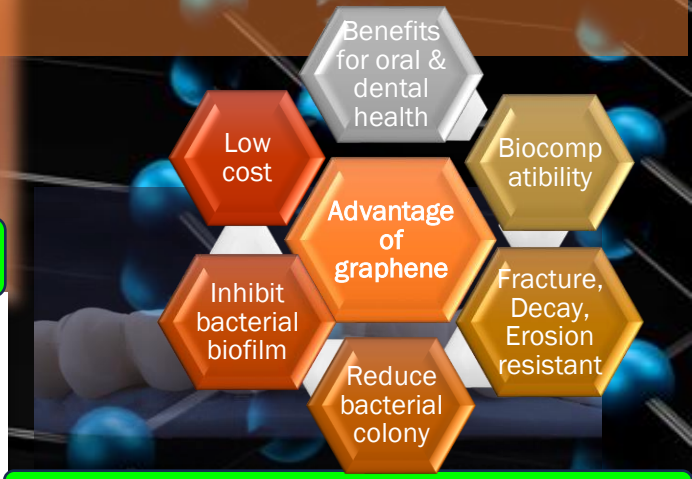
NbO2 (GO) and CxHyOz (rGO) are the two most popular graphene co-derivatives

Biological properties of graphene

- Biocompatibility
- Graphene-stem cell interaction
- Antibacterial activity
- Biodegradability

Application of graphene and its derivatives in Dentistry





Challenges on the graphene and its derivatives

1. Long-term toxicity and in vivo toxicity mechanism.
2. Biodegradability and biocompatibility

Conclusion

The development of graphene and its derivatives as biomedical materials has become highly interesting research field in the last few years. Meanwhile, this field of research is still in its infancy stage and its utilization in the dentistry deserves to be profoundly examined as it can prompt much progressively dependable dental treatments in the near future.