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SHARANABASAVESHWARA COLLEGE OF SCIENCE KALABURAGI,585103

one day webinar by student on,
GREEN CHEMISTRY

Conducted by: Department of Chemistry
Date:08/04/2020 Time:11am

Through:Zoom App
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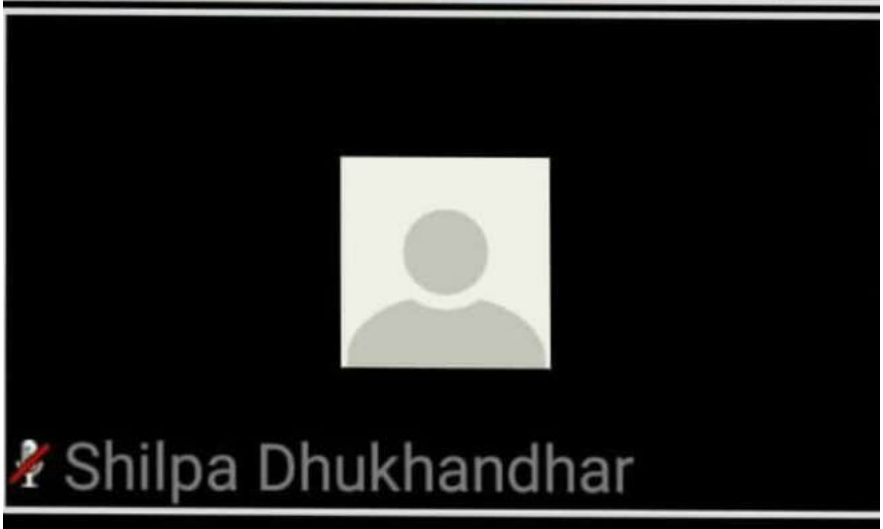

Close **Participants (14)**

Search

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 Nagaveni Hiremath (host)

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AD Anusha Deshpande

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Chats Invite

What is Green Chemistry?

- Definition from the Environmental Protection Agency:
- "Green chemistry is the design of chemical products and processes that reduce or eliminate the generation of hazardous substances."

- Green chemistry is the idea of making chemistry more environmentally friendly as well as more sustainable.

12 Principles of Green Chemistry

1. Prevent Waste

- Design reactions that leave less waste or none at all.
- Example: A new method of creating Simvastatin, a drug for cholesterol, with a much higher yield.

2. Maximize Atom Economy

- Making reactions with as little atomic waste as possible.

Stoichiometric:

$3\ PhCH(OH)CH_3 + 2\ CrO_3 + 3\ H_2SO_4 \rightarrow 3\ PHCOCH_3 + Cr_2(SO_4)_3 + 6\ H_2O$

Atom efficiency: 360/860 = 42%

Catalytic

$PhCH(OH)CH_3 + ½\ O_2 +$ **CATALYST** $\rightarrow PhCOCH_3 + H_2O$

Atom efficiency: 120/138 = 87%

12 Principles of Green Chemistry

3. Design Less Hazardous Chemical Synthesis

- Design reactions that use and produce as few harmful chemicals as possible.

4. Design Safer Chemicals and Products

- Design chemicals that can perform the same actions as those that exist, but with less toxicity.
- Example: Paint

12 Principles of Green Chemistry

5. Use Safer Chemicals and Products

- Avoid using toxic chemicals wherever possible.
- Example: QD Vision, Inc developed a less hazardous method for creating screens.

6. Increasing Energy Efficiency

- Create reactions that can be done at room temperature and standard pressure whenever possible.
- Example: 2005 winner of Nobel Prize in chemistry.

Yves Chauvin

Robert H. Grubbs

Richard R. Schrock

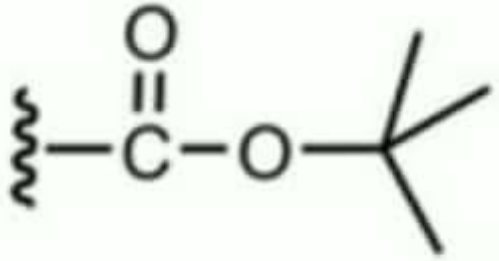
12 Principles of Green Chemistry

7. Use Renewable Feedstock

- Feedstock: starting materials used for many reactions.
- Use starting materials from renewable resources rather than limited ones like fossil fuels.
- Unrenewable example: Petroleum.
- Renewable example: Glucose.

8. Avoid chemical derivatives

- Avoid using blocking groups or protecting groups whenever possible, as it generates additional waste.
- Example: *tert*-Butyloxycarbonyl protecting group (BOC) which is used as a protecting group on amino acids.



12 Principles of Green Chemistry

9. Use Catalysts, not Stoichiometric Reagents

- In principle, catalysts are not consumed meaning they can be regenerated and reused within the reaction.
- Example: Catalytic aerobic oxidation is much faster than that aerobic oxidation without catalysts.

10. Design Chemicals and Products that Degrade After Use

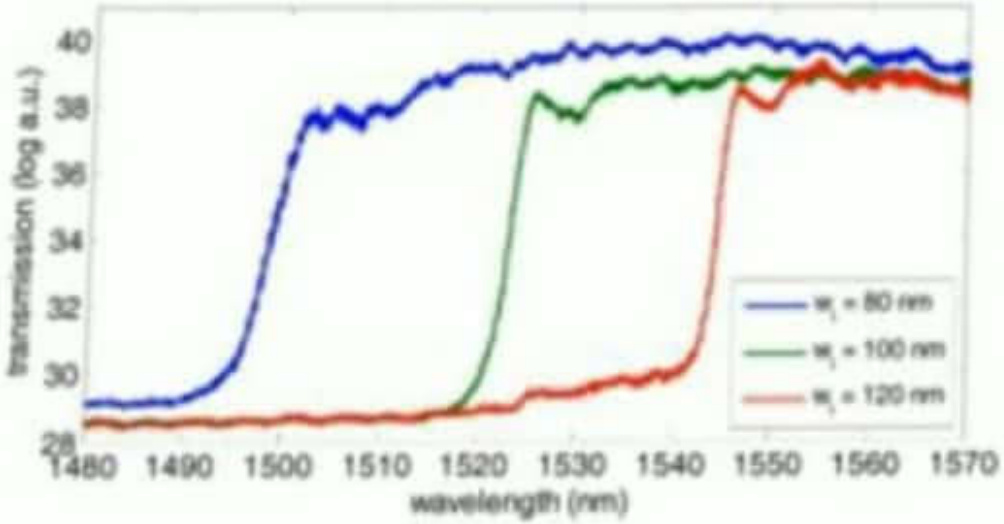
- Develop products that will naturally degrade in the environment, rather than remain and cause more pollution.
- Example: Ingeo™ Eco product

ingeo™
by NatureWorks

12 Principles of Green Chemistry

11. Analyze in Real Time to Prevent Pollution

- Monitor all reactions to ensure they are creating as few unwanted byproducts as possible.
- Example: Real time IR monitoring.



12. Minimize Potential for Accidents

- Design chemicals and reactions that have the smallest possible risk for accidents.
- Practice lab safety to prevent spills or other harmful accidents.
  - This helps prevent damaged to the environment, the lab, and you.

Feedback of Webinar.

The Webinar was well organised and very informative. I got to learn so many things from this webinar. This was a new Experience to give seminar in live Online session. this Experience improved my Confidence. I have got cleared all my doubts from teachers and they also corrected few of my mistakes in the Seminar I learnt more information about the topic by this interactive Session.

I thank Head of Department of Chemistry Dr Kanoji Shikkorgol sir for their Encourage and guidance. I also thank Dr Swaroop rani Madam for their Support throughout the Webinar. I also thank all the Participant for their active Participation and making this Webinar Successfull. THANK YOU ALL.

Report on ONE DAY WEBINAR.

The Webinar was Conducted on the topic 'Principles of Green Chemistry' The webinar was well organised by the authorities of the department of chemistry. In this webinar, the importance of Green chemistry and Principles of Green chemistry with Examples are Conveyed.