



Synthesis of Biodegradable Plastics from Wheat Husk

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Background:

Use of plastic products is necessary part of every person in the world. Plastic that is excessively used nowadays, it is conventional PE plastic which is non-degradable that persist in landfills and harm the environment. More than 380 million tonnes of plastics have been produced every year in the world. Non-degradable plastics is polluting our biosphere including lithosphere, hydrosphere and atmosphere.



Fig1(land pollution)



Fig2(water pollution)

Objectives:

Accomplishment of this project aims to develop biodegradable plastics to make environment clean, green and pollution free. It is economically cheaper than other plastics because it is synthesized from wheat husk(waste) that is abundantly available in every agricultural countries. The main objective of this project is to save humans from different fatal diseases including liver cancer, brain damage and kidney diseases.

Experiment

First of all we took wheat husk and extracted starch and lignocellulose material from it. Add 20g of these material and add 80 ml water in beaker and started to heat the mixture up to 70-80 °C continuously stirrer the mixture until gelatinization started then this suspension is cooled until temperature reaches up to 45-50°C and then add 10ml plasticizer drop wise in it. Add 10ml vinegar drop by drop in it and continuously stirrer the mixture until homogenous mixture formed. This paste is cooled and make a thin film on the glass plate



Result/Discussion

The results from various analysis confirms the formation of bioplastic is thermally stable and shows the maximum UV absorption. All these materials are biopolymers and having ability to form long chain and we can improve its physical and chemical properties by adding plasticizer. Vinegar is used as preservative and protect the film from attack of microorganism. Resulted film of bioplastic having high tensile strength and

comparable elasticity. We buried sample in soil and continuously observed the changing in sample after 5 days. After 30 days it started to decompose because its surface started to rough. Fig(a) shows a thin fresh film and Fig(b) shows decomposition after 30 days.



Conclusion

It is concluded that bioplastic that is synthesized from wheat husk having comparable strength , low cost, environment friendly and its raw material is easily available. Bioplastic would help us to reduce dependence and use of fossil fuels in industries. It has strong potential to replace other traditional plastic industries by launching bioplastic industries.

References

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