**Title:**

synthesis of eco-friendly biodegradable polymer from agro-waste materials

**Abstract:**

Plastic is material that is commercially made of petroleum-based polymers which takes long time to degrade in the environment. Destroying the plastic in incinerator leaves a negative impact to human and eco system in the environment. Due to increasing plastic waste in the environment and working towards green chemistry and researching for eco-friendly plastic, researchers are seeking for an alternative that can match the characteristic of conventional plastic und can be destroyed easily in the environment to be called bioplastics. Bioplastics are biodegradable polymers of biological origin. There is increasing focus on developing low cost and durable bio-based plastics, with a wide range of applicability.

This proposal of research is looking to synthesise biodegradable plastic by using wastes of agricultural materials as a component in making biodegradable plastic. The products produced were subjected into different tests such as: biodegradability test, chemical solubility test, air test and tensile stress test and were compared to one another. Majority of raw material for bioplastics production comes from agricultural crops, which indirectly poses threat to food security. Hence using organic wastes from biological origins, will not only limit our dependency on agricultural crops, but may also assist in solid waste management.

This environmentally friendly approach can remove our dependency from fossil based conventional polymers and will lead us to a much more sustainable future.

***Keywords: bio-Plastic, eco system, Biowaste, Bio Based Plastics, Eco friendly, biodegradable, waste management***

Plastic is a material that is very useful to every individual. Commercially plastics that are often used nowadays are petroleum based polymers which take longer years to degrade. These plastics when burned have a negative impact to human and to the environment. They have also detrimental effect to the marine and other aquatic lives when disposed to oceans and other bodies of water. Due to the increasing plastic waste all over the world, researchers are seeking for an alternative that can pass the requirements to be called biodegradable. This study utilized fruit and vegetable wastes as a component in making biodegradable plastic and used additives such as: polyvinyl alcohol as binder, glycerin as plasticizer, soya oil as stabilizer and 5 ml glacial acetic acid. Different formulations were carried out. The products produced were subjected into different tests such as: biodegradability test, chemical solubility test, air test and tensile stress test and were compared to one another. The tests conducted suggest that Formulation 5, which contains 100 g powdered peels, has the largest tensile stress indicating that it has the most tensile strength with considerable biodegradation and chemical solubility

Bioplastics are biodegradable polymers of biological origin. The exhausting fossil resources and ever increasing environmental pollution caused by plastics derived from these resources is driving the growth of the bio plastic industry. There is increasing focus on developing low cost and durable bio based plastics, with a wide range of applicability. Currently, a majority of raw material for bioplastics production comes from agricultural crops, which indirectly poses threat to food security. Hence using organic wastes from biological origins, will not only limit our dependency on agricultural crops, but may also assist in solid waste management, in an effective manner. Industries, particularly food and agriculture sector, produce significant amounts of organic wastes, which can be harnessed for this purpose. It will also reduce the cost of production to a remarkable extent. Hence, this review focuses on the types of bio based plastics and gives an insight on biological wastes that can be utilized to produce such plastics. It is indeed, the need of time to intensify innovations and research in this field to overcome the hindrances and developing viable processes for manufacturing bio based plastics. This environmentally friendly approach can remove our dependency from fossil based conventional polymers and will lead us to a much more sustainable future. Keywords: Plastic Pollution, Biowaste, Bio Based Plastics, Ecofriendly

Global plastic production has risen from 1.5 million tonnes per year in the 1950s to 288 million tonnes a year in 2012. This staggering increase has been driven by the low cost and range of mechanical properties that plastics can provide. However, the waste generated can be devastating to ecosystems. All five major oceanic gyres contain substantial amounts of plastic waste, which can injure or kill wildlife and spread invasive species. Furthermore, plastic does not biodegrade but remains in the environment for hundreds of years. While biodegradable alternatives to plastic cannot solve this problem, they may help to reduce these harmful impacts on a longer time scale. In this study, researchers investigated the possibilities of using agricultural vegetable waste. Europe alone produces 24 million tonnes of vegetable waste, such as stems or husks, every year. This material contains cellulose, a natural polymer—or chain of molecules—that can be used to mimic nonbiodegradable plastics.