




Final Year Project Showcase Batch-2017 Year 2021

Department: Metallurgical Engineering Programme: Metallurgical Engineering	
1	Project Idea Development of Biodegradable and Edible packaging films
2	Process Solution based blade coating method
3	Outcome Transparenct, biodegradable and edible packaging replacing common polyethylene films
4	Evidence (Theoretical Basis) Papaya and gelatin based edible films
5	Competitive Advantage or Unique Selling Proposition Most of the food packaging in the market today is petroleum-based plastics, which are neither environmentally friendly nor biodegradable. Such plastic packaging materials generate a huge amount of waste. This waste is carried out by the wind as well as water and deposited in the environment, spreading solid waste pollution to all corners of the world. The aim of this project is to synthesize a biodegradable and edible packaging materials to replace common non-biodegradable plastic packaging. The overall cost of the developed films was kept below 0.05\$/m ² . This low cost was made possible by using common materials and using a most convenient and simple coating technique. The mechanica properties of synthesized films were almost matching the commercial packaging films. The target of this work is to use these edible packaging for the protection of common dried food such as biscuits, dry fruit etc., this means the day is not far when the food and it packaging both will be eaten leaving no waste behind.
a	Cost Reduction of Existing Product Existing packaging costs 0.02 \$/m ² on commercial scale Our synthesized films cost 0.05\$/m ² on lab scale
b	Process Improvement which Leads to Superior Product or Cost Reduction, Efficiency Improvement of the Whole Process (e.g. What is the issue is current process and what improvement you suggests) The current polyethylene products need to be treated with high temperature to reuse them, our films can be prepare under ambient conditions using simple coating methods. By this way overall throughput of the production and overall cost can be reduced. Additional features of our films are the biodegradability and
c	Attainment of any SDG (e.g. How it is achieved and why it is necessary for the region) SDG#12, Responsible Consumption and Production The world is facing pollution problems and 30% of the pollution is caused by non-biodegradable packaging films. Hence we proposed to replace such non-biodegradable films with biodegradable and edible packaging films so that the overall pollution problem can atleast be controlled. SDG#13 Climate Action Completely biodegradable, non-toxic and environmentally friendly films are syntheized in this project
d	Expanding of Market share (e.g. how it expand and what is the problem with the current market) New era is all about the environmentally friendly and bioderadable materials, hence the edible and cost effective films are the talk of the town in recent times.



e	Capture New Market (e.g. Niche market or unaddressed segment)	Food packaging industries direly need such films that do not pose any negative impact on human and animal life after being disposed off. Currently the common plastics have a serious impact on all living species because their degradation rate is extremely slow and cause severe problems when inhaled.
6	Target Market (Industries, Groups, Individuals, Families, Students, etc) Please provide some detail about the end-user of the product, process, or service	Packaging industries that deal with the manufacturing of the common plastic films
7	Team Members (Names & Roll No.)	Abiha Khan (MY-012) Nabeel Mustafa (MY-024) Muhammad Kamran (MY-069)
8	Supervisor Name	Dr.-Ing. Iftikhar Ahmed Channa
9	Supervisor Email Address	iftikhar@neduet.edu.pk
10	Pictures (If any)	 <p>Lab scale papaya based biodegradable and edible packaging (Developed in Thin film lab of Metallurgical Engineering Department) showing packed dry fruit in it.</p>
11	Video (If any)	