

Final Year Project Showcase Batch-2018 Year 2022

Department: Biomedical Engineering		
Programme: Biomedical Engineering		
1	Project Idea	Development of degradable polymeric film mimicking cartilage tissue.
2	Process	Research, procurement and fabrication of biocompatible polymeric film.
3	Outcome	1SA/2PVA + ZnO is the best acquired ratio achieving the desired milestone of mimicking cartilage tissue.
4	Evidence (Theoretical Basis)	The Final Year Design project thesis provides insight into the development of degradable polymeric films mimicking cartilage tissue. The study focuses on the development of an elastic and biodegradable composite scaffold that is biocompatible, non-toxic, can effectively mimic cartilage tissue, and deliver mechanical strength associated with the surrounding environment. A polymeric film consists of a Synthetic polymer (Polyvinyl Alcohol) along with a natural polysaccharide (Sodium Alginate). Sodium Alginate (SA) is a biocompatible, non-toxic, and non-immunogenic biopolymer, while Polyvinyl Alcohol (PVA) is a hydrophilic synthetic polymer with good biocompatibility and toughness. The polymeric films are prepared via a chemical crosslinking technique involving solvent casting/molding and freeze and thaw methods in the process. Characterization techniques have been carried out for the analysis of the strength and potential of the developed material. pH analysis is performed to evaluate the behavior of the copolymer. The mechanical properties of the hydrogel are assessed via swelling rate measurement and tensile strength test.
5	Competitive Advantage or Unique Selling Proposition	
a	Attainment of any SDG (e.g. How it is achieved and why it is necessary for the region)	SDG#3: Good Health & Well being and SDG#10: Reduced Inequality are the two SDGs achieved. Cartilage mimicking polymeric film is capable to replace Osteochondral defective/injured cartilage, thus making individual capable of healthy mobile life with no vulnerable or unequal privilege.
b	Any Environmental Aspect	Biodegradable
6	Target Market	Pharmaceutical Companies, Surgeons/physicians, Individuals with articular cartilage defects .
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