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Usage of petrochemical plastic vs. bioplastics: A proposal of sustainable education

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Problem Statement: Worldwide, there have been some advances in obtaining material from organic waste that can be substitutes of petrochemical plastics. Its importance is because the gas emission from the greenhouse effect is lower in the process of bioplastics than the petrochemical derivatives. From the Summit of Rio, the Protocol of Kyoto and the Copenhagen Accord, among others, propose guidelines in the usage of bioplastics to be incorporated in education programs from the first levels.

Methodology & Theoretical Orientation: Based on a documental analysis of international instruments of environmental policy such as the Copenhagen Accord and the previously mentioned; and scientific documents that leads towards the advantages of the bioplastics usage. The goal of this work is to propose guidelines for education programs, orientated towards the preference of this type of materials, being considered as an educational and cultural challenge.

Results: Copenhagen Accord, among others, promote the sustainability of the natural renewable resources and stimulate commitments of promoting education and sustainable investigation in technologies for developing countries and the mitigation of greenhouse gases. The scientific documents reveal that the bioplastics degenerate in few weeks, its manufacture implies less environmental pollution, less energetic consumption and unrenovable raw material, they don't contain harmful additives for health, they don't modify either the smell or the flavor of stiff food; as well as the emission of greenhouse gases in the petrochemical industries.

Conclusion: Relying on the environmental agreements of international cooperation for the promotion of sustainable education. Intensifying the investigation of the bioplastics, it makes possible the creation of biodegradable material industries.

Recommendations: Spreading in educational branches the advantages of the usage of bioplastics to promote its preference; extending the study to university level with the creation of careers, programs and doctorate that form professionals on developing biodegradable technologies, and specialization programs of sustainable education for teachers and professors in educational levels.

Recent Publications:

1. United Nations Organization. Protocol of kyoto of the framework convention of the united nations on the climatic change. 1997.
2. The energy of the Cambio. Neila You Kill, Manuel. On April 29, 2015.
3. Report of the Conference of the Parts on his 15 period of meetings, celebrated in Copenhagen from December 7 to December 19, 2009. United Nation. 2010.
4. Declaration of Rio on the Environment and the Development. United Nations. Rio of Janeiro: s.n., 1992.

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Ionic conduction mechanism study of plasticized carboxy methylcellulose biopolymer electrolytes

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The study of ion conduction mechanism in biopolymer is important for designing better performance of biopolymer electrolyte for electrochemical devices. A solution casting method was successfully used to fabricate a biopolymer electrolyte system consisting of carboxymethylcellulose (CMC) as polymer host, oleic acid (OA) as ionic dopant and glycerol (Gly) as plasticizer. The CMC-OA-Gly biopolymer electrolytes were characterized using electrochemical impedance spectroscopy to study the ion-conduction mechanism. The optimum room temperature conductivity achieved is $1.64 \times 10^{-4} \text{ S cm}^{-1}$ for sample containing 40 wt% Gly. Conductivity mechanism of this biopolymer system fits the small polaron hopping (SPH) model.

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