

BIOFULES



Name: - R.G.B.K.Jayarathne
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Dept of: Computing &
Information Systems



Biofuels

Biofuels are produced from living organisms or from metabolic by-products (organic or food waste products). In order to be considered a biofuel the fuel must contain over 80 percent renewable materials. It is originally derived from the photosynthesis process and can therefore often be referred to as a solar energy source. There are many pros and cons to using biofuels as an energy source. This page contains articles that explore the many biofuel technologies.

❖ Common Algae for Biofuel Butanol Production

There have been various methods tried for reducing fossil fuel dependency and containing carbon footprints for a healthier and more eco-friendly future. Corn-produced **ethanol** has been used for mixing with gasoline but there have been side effects like corrosion from ethanol. Also huge tracts of precious farmlands need to be diverted for corn production. But now new research has thrown up results that show common algae can be used for **biofuel** production.



❖ The New Role of Microbes in Bio-Fuel Production

Currently **biofuel** is produced from plants as well as microbes. The oils, carbohydrates or fats generated by the microbes or plants are refined to produce biofuel. This is a green and renewable energy that helps in conserving fossil-fuel usage. But a new research has led to a new discovery of getting the microbes to produce fuel from the proteins instead of utilizing the protein for its own growth. The research is being done at the premises of **University of California** in Los Angeles.



❖ Forecasting Wind Data with Cell Phone Towers





Wind data provider **Onesemble** has developed sensors which can keep note of wind date for around 95% of the wind farms existing in the Texas area. The help of cell phone towers is sought for this purpose. Onesemble Network Sensors collect accurate data by getting to know the wind speed at a great height. This is done by placing the sensor at the height of the turbine rotor or the blades. Onesemble Network Sensors assembles figures on wind speed, direction and temperature in a cell phone tower, which are then analyzed on a computer to point out what is going to happen in times to come.

❖ Scientists Revisit Power from Potatoes

This could very well be the magic formula for future power generation. Yes, scientists are busy crafting what is now called as "solid organic electric battery based upon treated potatoes." These are absolutely eco-friendly batteries - based on the hidden powers of potatoes - which will be an economical answer to the growing power needs of developing and developed countries.



❖ Synthetic Fuel from CO2 and Solar Energy

Really amazing are the innovative ways **solar power** is put into use. Now a team of scientists working in **Sandia National Laboratories** is focusing on exploring basic steps to make synthetic liquid fuel with the help of solar panels. The goal is that this will help considerably reduce carbon dioxide emissions.



❖ Giant Inflatable Airship Powered by Algae

This summer, piloted by Captain Allan Judd, Bullet 580 will usher in the return of inflatable giant airships. The 235 ft long and 65ft diameter ship is covered with a type of Kevlar, a material 10 times-stronger than steel but only one sixteenth of an inch thick. An **E-green** design special costing £5.5million, this giant runs on algae - latest **bio-fuel** that can be developed from brackish and waste water.





❖ Affordable Solar Power with Purple Pokeberries



Researchers at **Wake Forest University's Center for Nanotechnology and Molecular Materials** are trying to achieve source of clean and green power through pokeberries! Pokeberries could be helpful in making **solar power** accessible to many. Nanotech Center scientists have extracted the red dye from pokeberries to paint their efficient and low-cost fiber-based solar cells. The dye acted in a desirable manner. It acts as an absorber, helping the cell's minute fibers entrap more sunlight to convert into power.

❖ Solar Energy from Plant Protein Structure

Nanoscience is quite fascinated with the process of photosynthesis. They want to duplicate this process exhibited by green plants and utilize the solar power for energy use. Till now power generating solar panels are not in a position to replace the fossil fuels. They produce little amount of energy and quite expensive also. **Generation of solar energy** also depends on geographical locations. Deserts are more suitable locations for solar power than areas experiencing temperate climate. But we can have a new source of solar power that also delivered a power packed performance for us when it is on our dinner/lunch plate i.e. pea power.



❖ Solar Cells from Tobacco Plants May Be a Reality Soon

As the world continues its quest to use less fossil fuels, the latest possible solution comes from the most unlikely of sources: the tobacco plant. This latest news comes from the **University of California, Berkeley**. It will be nice to see tobacco used for something other than lung cancer. This new discovery is based on the possibility of literally programming the cells of the plants to get solar cells from tobacco plants. The science behind it is actually pretty simple (at least in explanation form) and pretty amazing. By using a genetically engineered virus, scientists were able to literally transform the cells of the plants to create synthetic solar cells.





❖ How to apply Biofuels to Sri Lanka

In Sri Lanka, biofuels are the primary source of energy and account for nearly 66% of the annual energy consumed. Annually nearly 10 million tons of wood alone, worth nearly 440 million US\$, are consumed. Biomass fuel is extremely important for its contribution as a source of cooking energy, and hence to food security, an area in which the implications on nutrition and health can be contextualized.

Despite the recent expansion in the use of alternative energy sources such as hydroelectricity, natural gas and paraffin, biomass remains the most popular energy source in Sri Lanka. The household sector consumes nearly 81% of the biomass energy used in Sri Lanka. About 98% of rural households, 80% of urban dwellers, and 99% of plantation dwellers depend on biomass for cooking. Due to the increasing population, depletion of supply sources, and socioeconomic trends; the use of residues, softwood, and small twigs and trimmings has been increasing. A crucial feature is the gender specific expectations embedded in the biofuel cycle. From gathering to combustion, women's occupations in the three domains as gatherers, carriers, and end-users have resulted in a gender imbalanced system. The biofuel cycle as a whole has become an important source of difficulty, stress and physical discomfort for women.

The economic advantages of using biomass have undoubtedly been attractive, especially for those women who live below the poverty line and must manage their households on limited incomes. But is it fair to neglect the costs involved in the whole system, and the possible health repercussions that millions of gatherers, carriers and users are subjected to over the course of daily life, and which both families and states eventually pay for? Within this context; how the various spheres in the whole cycle are interconnected, which social sectors are at the centre of the cycle, and what health issues reoccur in the system, are all important policy-related questions.



❖ Conclusion

Also known as biofuel, these fuels are mainly derived from biomass or bio waste. These fuels can be used for any purposes, but the main use for which they have to be brought is in the transportation sector. Most of the vehicles require fuels which provide high power and are dense so that storage is easier. These engines require fuels that are clean and are in the liquid form.

Biofuels are the best way of reducing the emission of the greenhouse gases. They can also be looked upon as a way of energy security which stands as an alternative of fossil fuels that are limited in availability. Today, the use of biofuels has expanded throughout the globe. Some of the major producers and users of biogases are Asia, Europe and America. Theoretically, biofuel can be easily produced through any carbon source; making the photosynthetic plants the most commonly used material for production. Almost all types of materials derived from the plants are used for manufacturing biogas. One of the greatest problems that is being faced by the researchers in the field is how to convert the biomass energy into the liquid fuel.