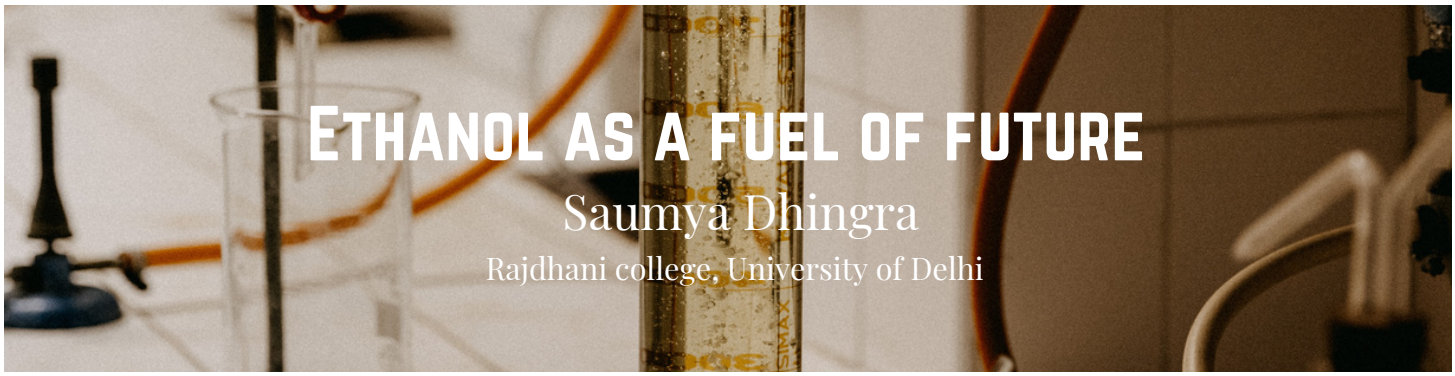

Ethanol as a fuel of future

Saumya Dhingra
Rajdhani college, University of Delhi

Ethanol has long been touted as a potential fuel of the future. This biofuel is made from plant materials such as corn and sugar cane and offers many advantages over traditional fossil fuels such as gasoline and diesel. It is considered a promising alternative to traditional fossil fuels due to its favourable characteristics, including its renewability, environmental benefits, and potential to reduce our dependence on foreign oil. Further in this article we discuss the potential of ethanol as a fuel of the future, its benefits and challenges. Ethanol is a renewable fuel, unlike fossil fuels which are finite resources, ethanol can be produced indefinitely. This is because the raw materials used to produce ethanol, such as corn and sugarcane, can be harvested annually. Additionally, ethanol can also be made from other sources such as agricultural waste and switchgrass. These resources are abundant and renewable, making ethanol a sustainable alternative to fossil fuels.Another advantage of ethanol is that it is a cleaner burning fuel. Burning ethanol produces less greenhouse gas emissions than gasoline or diesel. This is because the carbon dioxide released when ethanol is burned is offset by the carbon dioxide absorbed by the plants used to make the fuel. This makes ethanol much more efficient than traditional fossil fuels, environment-friendly fuel. Additionally, ethanol has the potential to reduce our dependence on foreign oil. India, like many other countries, imports most of its oil from abroad. This dependence on foreign oil can have negative consequences for the Indian economy, including potentially destabilizing fuel prices and its supply.

By using ethanol as a fuel, India can instead rely on domestically produced biofuels. This can help to stabilize prices and ensure a steady supply of fuel for years to come. Additionally, the production of ethanol in India can create jobs in agriculture, manufacturing, and transportation, which can have a positive impact on the country's economy. Furthermore, ethanol is a versatile fuel that can be used in a wide variety of vehicles. Ethanol can be mixed with gasoline in various amounts from 10% to 85% to create fuels suitable for various vehicles. Many modern cars are designed to run on ethanol mixtures, and there are even specially designed flex-fuel vehicles that can run on any mixture of gasoline and ethanol. Using ethanol as a fuel also has economic advantages. Ethanol production creates jobs in agriculture, manufacturing and transportation. Additionally, using ethanol can reduce fuel costs for consumers. As ethanol production increases, the cost of producing ethanol is likely to drop, making ethanol an even more attractive fuel option for the future.

Although ethanol has many advantages, it also presents some challenges that must be addressed. One of the biggest challenges is the cost of producing ethanol. Ethanol production costs have fallen in recent years, but it is still more expensive than conventional fossil fuel production. This could make it difficult for ethanol to compete with gasoline and diesel on a cost basis. Another challenge is the infrastructure required for the distribution and use of ethanol. There are currently a limited number of ethanol filling stations, making it difficult for consumers to access the fuel.

Additionally, many older vehicles were not designed to run on ethanol mixtures, which could limit the market for ethanol.

Finally, there are concerns about the environmental impact of ethanol production. Ethanol is a cleaner burning fuel than gasoline or diesel, but its manufacturing process can have a negative impact on the environment. For example, corn-based ethanol production requires large amounts of water, which can lead to soil erosion and other environmental problems. Bottom line is that ethanol has real potential to be the fuel of the future due to its many advantages. It is a renewable, clean-burning fuel that can help reduce dependence on foreign oil and create more jobs in agriculture and manufacturing. Although there are challenges to be overcome, such as the cost of production and the need for infrastructure, the benefits of ethanol are significant and cannot be ignored. Governments, industries, and individuals must work together to increase the production and use of ethanol, while continuing to invest in research and development to improve the efficiency and effectiveness of this fuel source. With these efforts, ethanol can play a significant role in achieving a more sustainable, cleaner, and secure energy future for all.

SPECIALTY CHEMICALS

Will ethanol fuel a low-carbon future?

After decades of false starts, cellulosic ethanol may arrive just as the chemical and fuel industries clamor for a low-carbon feedstock

by Craig Bettenhausen

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Credit: Braskem | Braskem is already making ethylene and derivatives from ethanol at scale in Brazil.

Cellulosic ethanol has been 5 years away for decades. It’s a trope, but it’s been true as plant after plant trying to make ethanol from corn stover and other agricultural waste has opened to great fanfare and then closed in ignominy. But this time may be different. The biobased business community seems confident that a round of companies starting up plants has cracked the feedstock problems that stymied earlier attempts and has improved cellulose depolymerization. If the technology works, a host of customers in the chemical and fuel industries is eager for ethanol as a low-carbon feedstock.

Humans have a complicated relationship with ethanol. Of course, many drink the stuff. People have also been working for decades to scale it up as a fuel and a chemical feedstock. The dream is that with the right technology for making and using ethanol, the chemical and energy industries could break their reliance on petroleum and drastically cut their climate impact.

But that dream has a troubling side. Conventional ethanol relies on sugars extracted from corn, sugar beets, and sugarcane. Growing those crops requires fertilizer and fossil-fueled farm equipment, moving them requires diesel-fueled trucks, and fermenting and distilling them requires heating fuel. To top it off, the ethanol fermentation process yields carbon dioxide as a by-product.