

Lecture 8 Fuel Chemistry

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As you learn about bioenergy you will almost certainly find yourself confused by the various naming conventions. Like most names they have been largely based on marketing and not on facts. For example, bio-oils generally mean pyrolysis oils which have no chemical similarity to petroleum or vegetable oils. Biogas actually means biologically produced methane or natural gas and has nothing to do with gasoline. Biodiesel is an interesting one because it almost exclusively composed of something called fatty acid methyl esters which makes it a very pure fuel, compared to renewable diesel which is a mixture of hydrocarbon components more like regular diesel. Finally the word blendstock is thrown around a lot because most biofuels are in fact blendstocks and this means it has to be mixed with regular gasoline or diesel at some level to be a fuel that works well in the engines commonly available today.

It is very important to remember that diesel and gasoline engines have been designed for different kinds of fuel. This means that each engine has a preferred type of fuel for its design and this type of fuel has its own engine specific fuel performance characteristics (octane value or cetane value). Octane and Cetane value describe how well a fuel will perform in an engine, not the energy content of the fuel. A good fuel can be an exotic cocktail of organic chemistries meant to provide good overall vehicle performance and meet regulations. A good fuel serves the needs of the entire vehicle and not just the engine.

□□□□ : <https://www.youtube.com/channel/UCiFXuor4e2agZo5aApgVpTQ>

□□□□□□□□□□ An Introduction to Bioenergy & Biofuels