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Breaking biomass into its parts and breaking those parts into chemicals and fuels is very focused on the biomass cell wall. However, biomass isn't all cell wall and it can be squeezed to produce oils in some cases. These oils get turned into fuels using their own class of chemical conversions. Biodiesel is produced by chemical reaction called trans-esterification that actually adds more oxygen to the oil to make it a better fuel. Renewable diesel is produced by any chemical process that removes the oxygen from the natural fat/oil and makes long straight chemical. This is like high tech, super charged vegetable oil hydrogenation. Hydrogenated vegetable oil is a chemical we have been making for over 50 years for food and in some cases it makes a great fuel. A lot of the exact same reactions are being re-cast and re-thought so that they can be used to hydrogenate oils for fuel instead of food. Soap is generated from a reaction called saponification that stabilizes the oil by making it a salt. It is ironic to think that we wash oil away using a product made from oil, but like dissolves like so it does make sense. Syngas conversions are the most common gas conversion in bioenergy. Syngas can be used to produce a wide range of chemicals with good efficiency. While syngas can be used to produce a lot of different things, logical consideration of thermodynamics makes it pretty clear that the best syngas conversions will happen with reactions that generate chemicals similar to syngas.

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