WHAT IS CLAIMED IS:

Claim 1. A method of transesterification of triglycerides, the method comprising:

combining tetraalkoxyborate with a triglyceride composition to form a reaction mixture; and

heating the reaction mixture above 40 ºC to form fatty acid alkyl esters.

Claim 2. The method according to claim 1, wherein the tetraalkoxyborate is selected from the group consisting of tetramethoxyborate, tetraethoxyborate, tetrapropoxyborate, and tetrabutoxyborate.

Claim 3. The method according to claim 1, wherein the fatty acid alkyl esters are selected from the group consisting of fatty acid methyl esters, fatty acid ethyl esters, fatty acid propyl esters, and fatty acid butyl esters.

Claim 4. The method according to claim 1, wherein heating occurs from about 1 hour to about 24 hours.

Claim 5. The method according to claim 1, further comprising:

making the tetraalkoxyborate in a reaction vessel; and

adding the triglyceride composition to the reaction vessel.

Claim 6. The method according to claim 5, wherein making the tetraalkoxyborate includes:

combining borohydride with an alcohol.

Claim 7. The method according to claim 6, wherein the alcohol and the tetraalkoxyborate include the same alkoxy group.

Claim 8. The method according to claim 7, wherein the alkoxy group is selected from the group consisting of a methoxy group, an ethoxy group, a propoxy group, and a butoxy group.

Claim 9. The method according to claim 5, wherein making the tetraalkoxyborate includes:

combining trialkoxyborane with an alkoxide salt.

Claim 10. The method according to claim 9, wherein the trialkoxyborane, the alkoxide salt, and the tetraalkoxyborate include the same alkoxy group.

Claim 11. The method according to claim 10, wherein the alkoxy group is selected from the group consisting of a methoxy group, an ethoxy group, a propoxy group, and a butoxy group.

Claim 12. The method according to claim 1, further comprising:

hydrogenating fatty acid alkyl esters.

Claim 13. The method according to claim 12, wherein hydrogenation is performed using hydrogen collected during making of the tetraalkoxyborate.

Claim 14. The method according to claim 1, wherein the tetraalkoxyborate is tetramethoxyborate, the triglyceride composition includes at least one of a vegetable oil or an animal fat, and heating the reaction mixture above 40 ºC forms a diesel fuel including fatty acid methyl esters.

Claim 15. The method according to claim 14, further comprising:

making the tetramethoxyborate by combining trimethoxyborate with a methoxide salt.