

High Performance Liquid Chromatography for preparative purification of products from glycerol oxidation

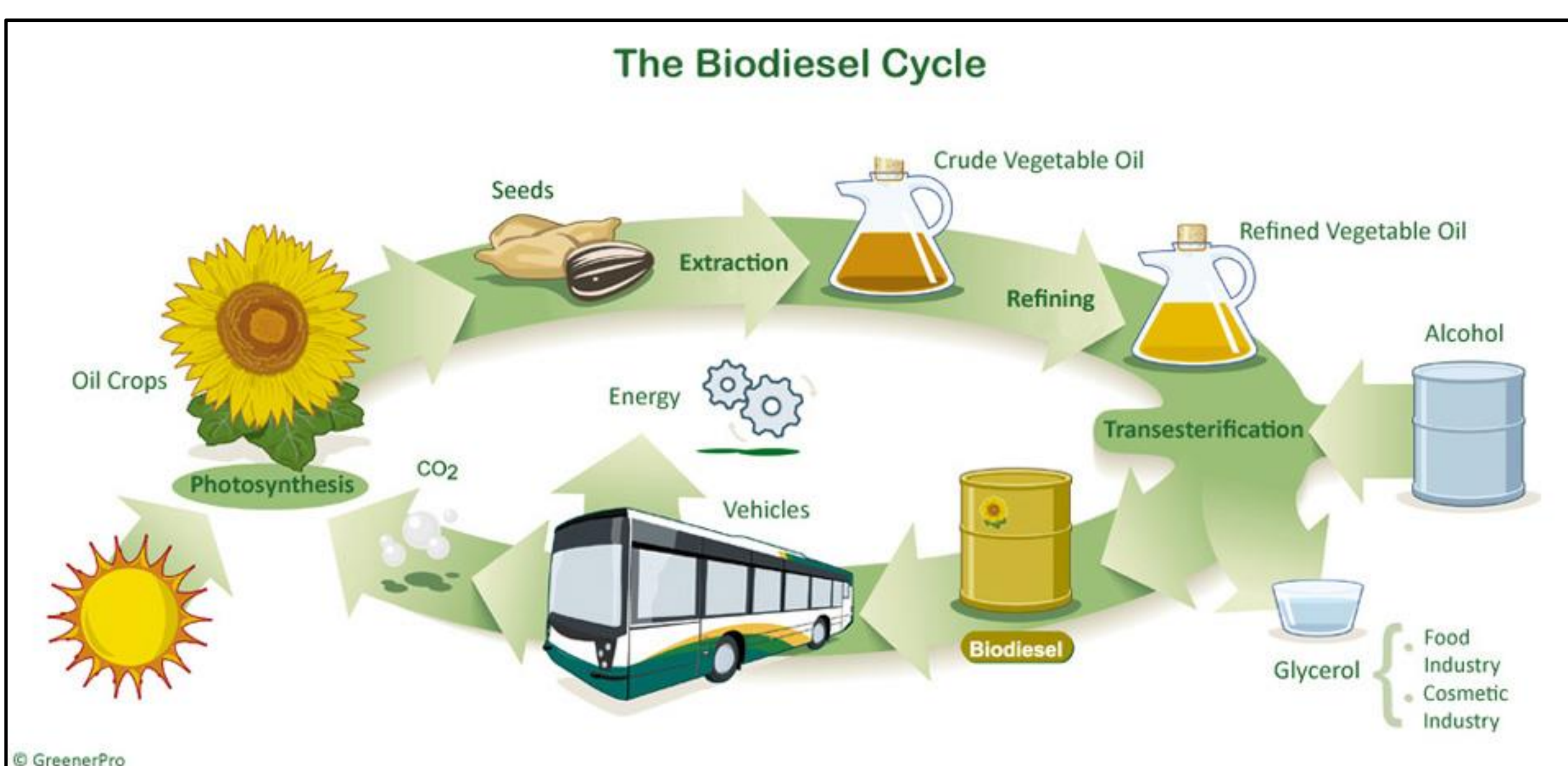
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AIM AND SCOPE

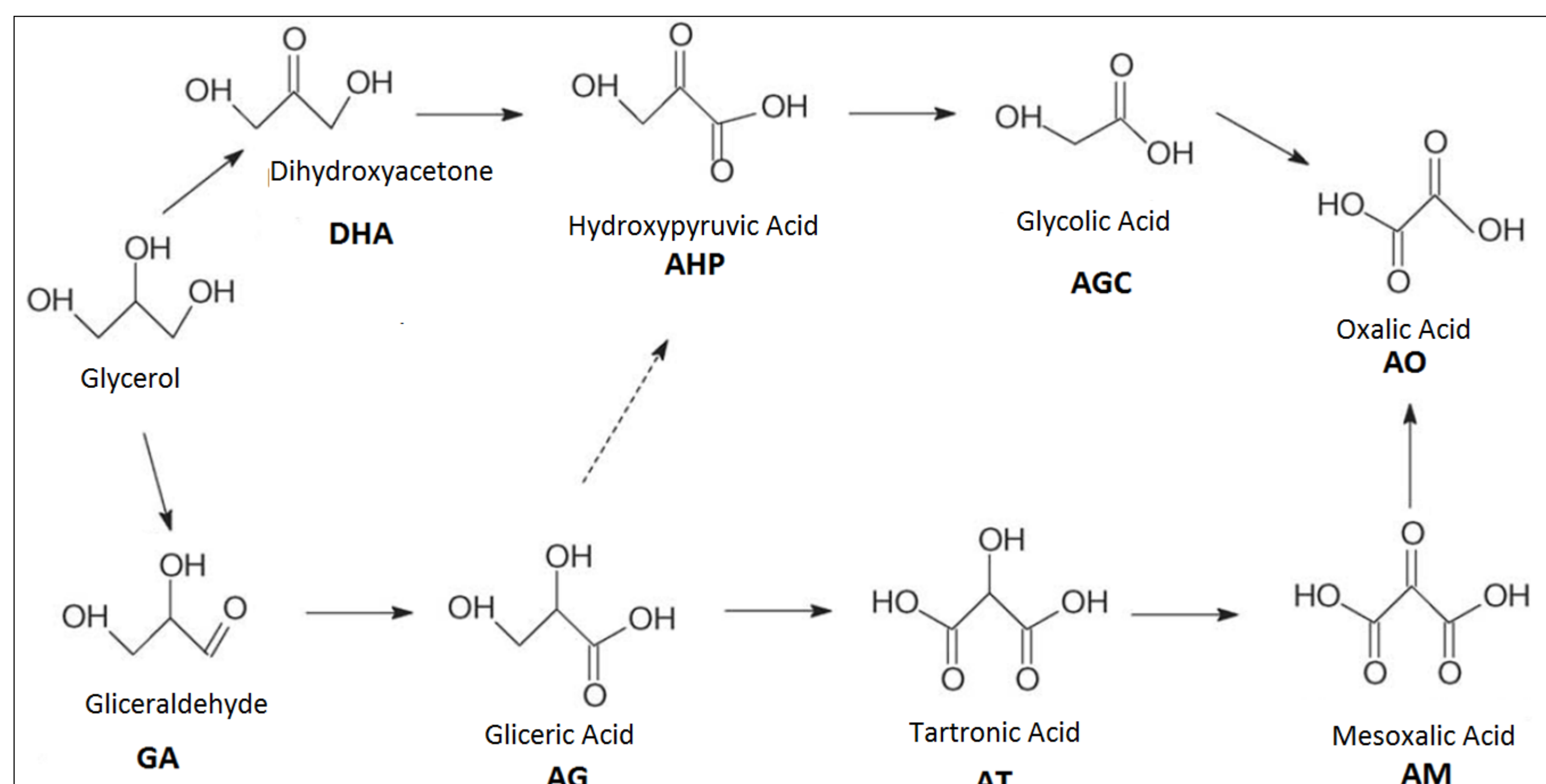
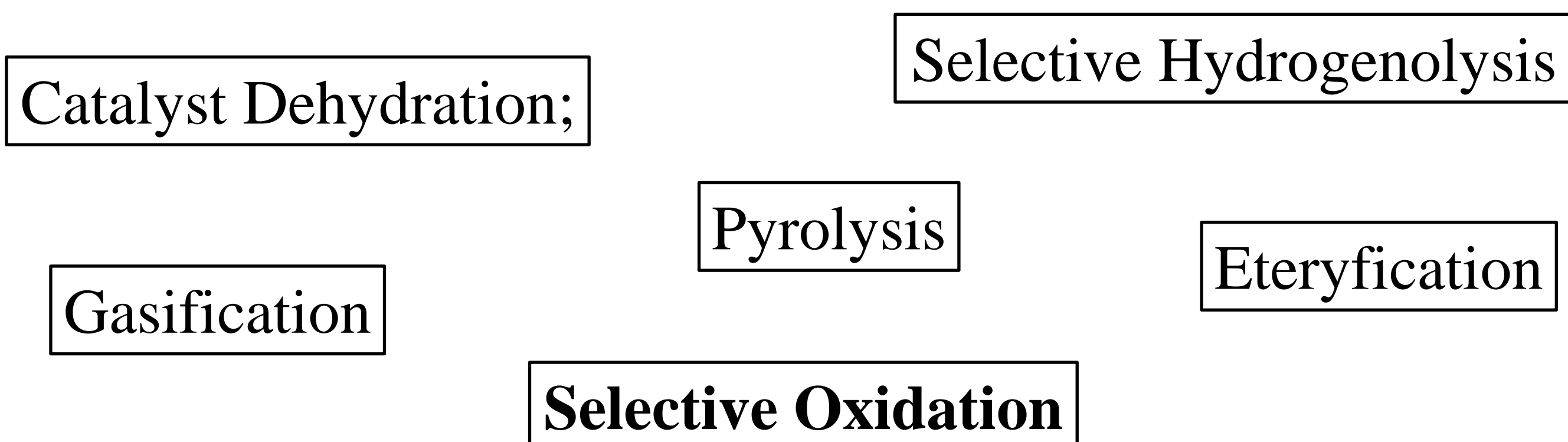
Glycerol represents 10 to 20% by volume of biodiesel produced normally. Although it is a raw material and there are over 2000 industrial uses for it, the increasing production of biodiesel has decreased glycerol price. Besides, it has been treated as industrial waste, and now, new problems have been in the focus of the scientific community, too: The Social and Environmental impacts of glycerol (1).



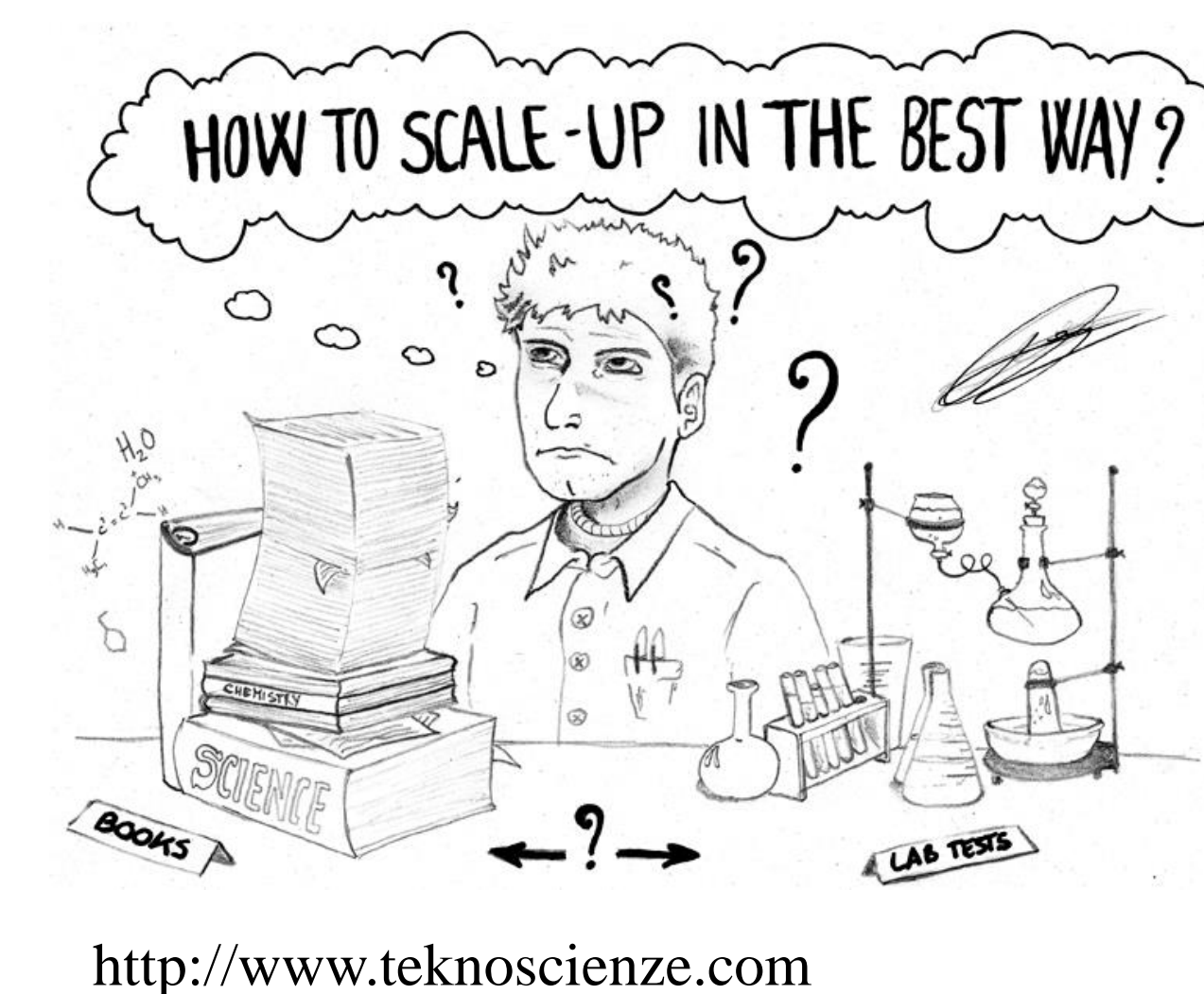
<http://www.metaefficient.com/tag/excise>

The crude glycerol has little commercial value. But, if it could be used to produce other products with commercial interest, logically this will help to improve the economic viability of the biodiesel industry.

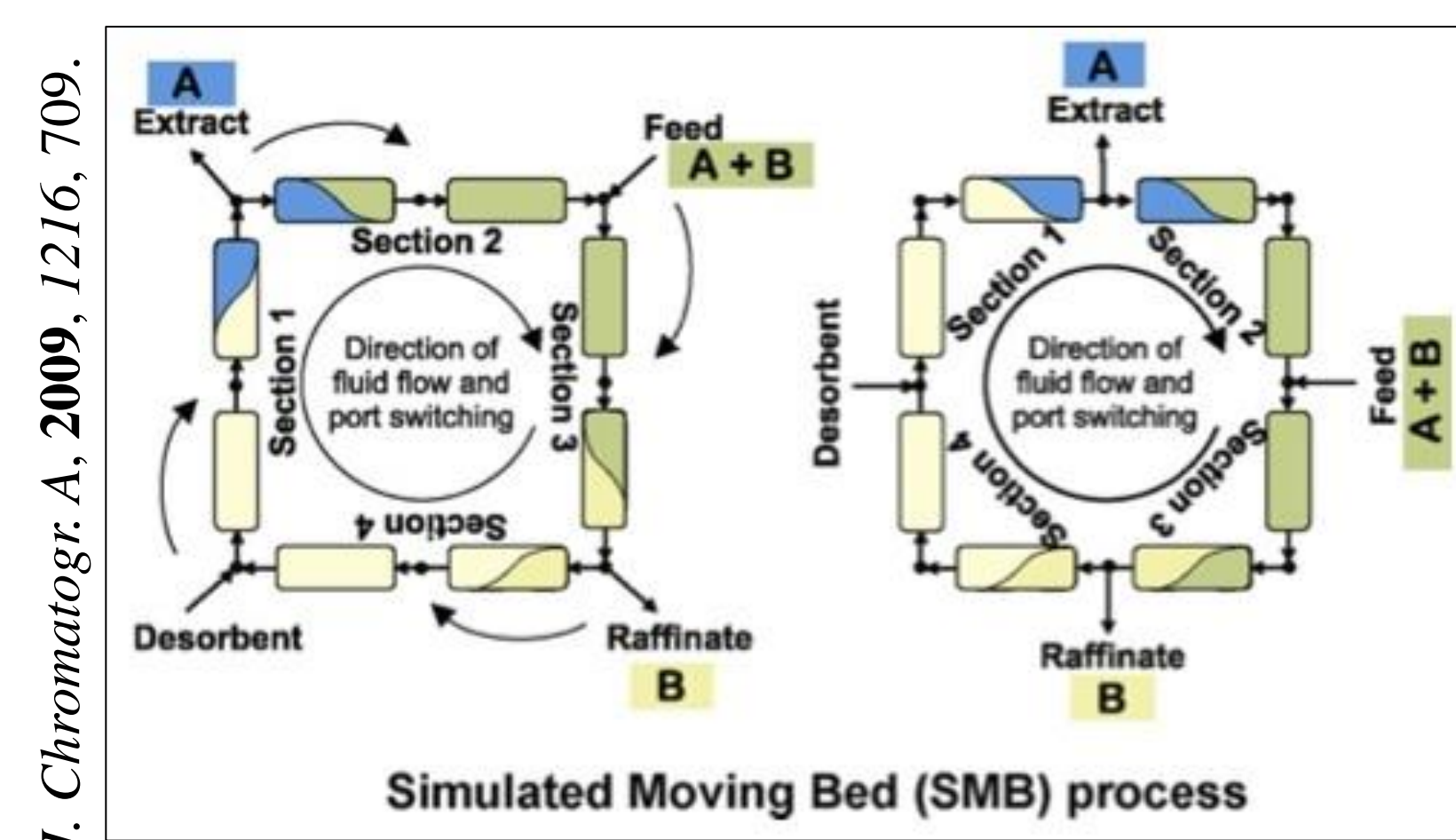
To convert glycerol into chemicals and fuels of interest for fine chemical and pharmaceutical industries, there are many types of reactions (2), as:



For the market, an entire industrial process can be discarded if the purification is not energetically and commercially favorable. The difficulty is even greater, in those cases where the compounds are in low concentrations or are similar.



Simulated Moving Bed (SMB), a technique based on the principles of adsorption, is an effective method that provides products of high purity and high separation efficiency (3).



SMB – Applexion® – (NOVASEP)

Our work aims to study the feasibility of the purification of these compounds, at preparative levels. These compounds will help to enhance the biodiesel production chain and in future we hope develop the technique to the industrial level.

RESULTS SO FAR

The catalytic oxidation processing of soluble glycerol has been studied intensively and good results have been reported in the literature. From 50% of conversion of glycerol has been obtained about 70% of glyceric acid, 50% of glycolic acid and 25% of tartronic acid - depending on operating conditions of each reactions. Our Laboratory of Catalytic Processes (LPC) has performed optimizations of the process through metallic catalysts as platinum, bismuto and palladium, previously prepared and characterized in basic conditions (4). The combination of metallic catalysts, as bimetalics has shown more effectiveness than monometalic catalysts.

REFERENCES

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ACKNOWLEDGEMENTS

