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BOOK REVIEW

Veera Gnaneswar Gude (Ed): Green Chemistry for Sustainable Biofuel Production

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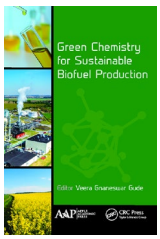

Bibliography
Green Chemistry for Sustainable Biofuel Production
Veera Gnaneswar Gude (Ed)
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GBP 139.00, USD 179.95

Although there is an emotional desire to believe existing global in-use fossil fuel resources are approaching exhaustion, it is not supported by the facts. All authors and editors describing alternative fuels preface their books with messages echoing this sentiment quoted here: "Petroleum sources ….. are diminishing at a much faster rate than the natural resources can replenish them", disingenuously phrased to disguise an untrue statement. The discovery and exploitation of the immense, and as yet undreamt of, quantities of shale gas and condensate are universally ignored.

The editor has collated the work of forty-two authors into four parts, subdivided into fourteen chapters. The four divisions cover the biofuels produced from renewables, alternative feedstocks, and green processes; biofuel chemistry and process intensification; biofuels from microalgae, other waste resources and biorefinery concepts and finally energy balance, techno-economics and life-cycle inventories. From the title of the latter section, it was anticipated that at last some authors were actually prepared to cost the processes described, and where the cost of production of a specific biofuel would be compared against the current or even predicted future cost (as a function of the alleged shortage) of fossil fuels—only to be disappointed. At an advanced point of any design, chemical engineers will routinely calculate a predicted cost of production. In over two decades of reviewing books on biofuels, not a single paper has ever provided such data. Until they do, most readers will remain unconvinced that these synthetic fuels have any practical future.

Of the processes described, possibly those utilizing feedstocks of negative value, defined as those whose disposal cost can be deducted from the product's eventual manufacturing cost, have a future. Globally, billions of gallons of wastewaters are processed daily, mostly adopting the activated sludge process, in turn producing sewage sludge. The USA alone disposes of 8.2 million tons per annum of sewage sludge, by incineration, landfill or as compost. All have negative value. Several routes of conversion into biodiesel are proposed; transesterification; hydrotreatment; gasification and others—but are any of these routes cost competitive? It can only be assumed from the total silence on this subject that the answer is negative. More ominously, it would appear we are not meant to know.

It is in the nature of humankind to seek the most economic answer to any given problem. Currently, that is the burning of fossil fuel. However, most governments tinker with subsidies, when they run out of taxpayer's money, commonsense has to return, or until such time as the new technologies are shown to compete on price. The major oil companies have declared they can still prosper at a crude price of $50/bbl. Using that as a benchmark, and by publishing the estimated costs of production of the new technologies described here, it would then be possible to assess the real value of the various approaches investigated. Although one can admire the ingenuity in some approaches, the actual value of the work is ephemeral.

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