

ABSTRACT

Over the past few decades, biodiesel produced from oilseed crops and animal fat is receiving much attention as a renewable and sustainable alternative for automobile engine fuels, and particularly petroleum diesel. However, current biodiesel production is heavily dependent on edible oil feedstocks which are unlikely to be sustainable in the longer term due to the rising food prices and the concerns about automobile engine durability. Therefore, there is an urgent need for researchers to identify and develop sustainable biodiesel feedstocks which overcome the disadvantages of current ones. On the other hand, Artificial Neural Network (ANN) modeling has been successfully used in recent years to gain new knowledge in various disciplines. The main goal of this article is to review recent literatures and assess the state of the art on the use of ANN as a modeling tool for future generation biodiesel feedstocks. Biodiesel feedstocks, production processes, chemical compositions, standards, physio-chemical properties and in-use performance are discussed. Limitations of current biodiesel feedstocks over future generation biodiesel feedstock have been identified. The application of ANN in modeling key biodiesel quality parameters. This review has determined that ANN modeling has a high potential to contribute to the development of renewable energy systems by accelerating biodiesel research.

Keywords:

Biodiesel, Transesterification, ANN, Optimization, Training, Validation