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Model and simulation of a packed resin column for biodiesel purification

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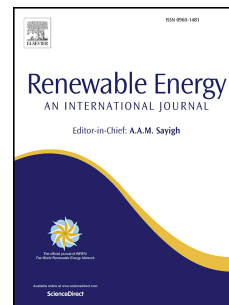
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1 Model and simulation of a packed resin column for biodiesel purification

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6

7 Abstract

8

9 This study aims to develop a multiphysics model using the finite element
10 method for the simulation of a packed column. This column was filled with ion
11 exchange resins SP112H and GF101, performing purification for the dry washing
12 process mainly to reduce the free fatty acid content (FFA), monoacylglycerol (MAG),
13 diacylglycerol (DAG), and triacylglycerol (TAG) biodiesel samples. Results obtained
14 from simulations were compared to the experimental results for acidity, MAG, DAG
15 and TAG. It was found that the simulation results represented with reasonable
16 agreement the experimental.

17

18 **Keywords:** Biodiesel purification; simulation; dry washing; ion-exchange resins;
19 packed column.

20

21 1. Introduction

22

23 In the biodiesel production process, different types of catalysts are used; for
24 example, alkali catalysts, acidic catalysts and enzymatic catalysts [1-4]. Considering

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