DE GRUYTER OPEN

doi: 10.2478/auoc-2014-0015

Ovidius University Annals of Chemistry Volume 25, Number 2, pp.81-84, 2014

Prediction of products yield at the thermal cracking of vegetable oil

Doinita Roxana CIOROIU and Claudia Irina KONCSAG*

Department of Chemistry and Chemical Engineering, „Ovidius" University of Constanta, 124 Mamaia Blvd., Constanta 900527, Romania

Abstract. According to previous studies on the pyrolysis of vegetable oils, it resulted that the thermal cracking process is prone to produce large yields of ethylene, propylene, hydrogen and methane, comparable with the gas proceeding from the steam cracking of naphtha, but at much lower process temperature, this ensuring important energy savings. The studies are performed on very different raw materials and different reaction conditions, that being why at this moment it is very difficult to predict the products yield. This paper uses an analytical semi-empirical model (ASEM) developed at the University of Florida, by applying it to a different raw material. The ASEM model fits very well to our experimental data, obtained at higher temperature but some parameters have to be adjusted. In the end we confirm a set of systemic parameters to be used for the prediction of main products yield proceeding from vegetable oil in an extended range of temperatures.

Keywords: waste vegetable oil, cracking, olefins, systematics, ASEM

ISSN-1223-7221