Abstract: The pyrolysis of microalgae to produce bio-oil is one of the most promising technologies on renewable energy resources. Bio-oil is a kind of clean biological energy resource with high energy density and similar chemical composition to the diesel fuel. During the process of pyrolysis, microalgae produces great amount of nitrogen-containing compound, which causes NOx emissions during combustion. However, pyrolysis of microalgae was still remained in its all components investigation at present. Therefore, the pyrolysis of a single component will make full use of microalgae resources. The crude fat was employed as raw material, which was extracted from Nannochloropsis sp. by using acid hydrolyzation method. Two kinds of feedstocks, namely crude fat and all components, were pyrolyzed in a fixed bed reactor, and the effect of temperature and heating rate on the yield and properties of the two groups of bio-oil were investigated. It showed that the fat in the Nannochloropsis sp. increased the yield and properties of bio-oil when pyrolyze all components. Moreover, with the increase in temperature and heating rate, the yield and properties of bio-oil from crude fat and all components followed the same varying trend, and their best properties were obtained at 200℃/min, 600℃. Compared with pyrolysis of all components, the deoxidizing ratio and the content of carbon, hydrogen elements in crude fat after being pyrolyzed were higher, therefore the properties could be further improved with the increase of fat in the Nannochloropsis sp.