# Deposit characterization of a diesel engine combustion chamber by droplets at hot chamber temperature: effect of temperature on evaporation time and deposit structure

Muhammad Taufiq Suryantoro, author



---

Abstrak

In 2016, the mandatory use of biodiesel as a substitute fuel by up to 20%, as introduced by the Indonesian Ministry of Energy and Mineral Resources, forced vehicle manufacturers to invent suitable engines that would accept biodiesel. The use of biodiesel in such a large proportion is highly risky, particularly due to the formation of deposits in the combustion chamber engines. The previous method of fuel droplets are placed on a hot plate approach produces deposits are slightly different from those generated by a real engine, therefore to obtain realistic deposits it is necessary to modify this method so temperatures as hot as those in a real engine. In this study, the potential deposit formation of biodiesel fuel was examined by conducting the deposition process and the evaporation of fuel on a stainless-steel plate (SS), which was placed in a closed space. Deposit characterization was carried out on a hot plate using Scanning Electron Microscopy (SEM). The test results showed differences in the structures of the deposits produced by biodiesel and diesel fuel; fine structures were seen in the former, while those of the latter were rougher and more porous. Deposit results that are similar to what is seen in a real engine will be very helpful for knowing the patterns, structures, and mechanism of the formation of deposits in such an environment.