



## Synthesis of Co, Ni, and Pd Metals Supported on Mesoporous Carbon as Catalysts for Hydrocracking of Waste Lubricant

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**Abstract:** Synthesis of Co, Ni, and Pd metals supported on mesoporous carbon as catalysts for hydrocracking of waste lubricant has been conducted. The mesoporous carbon (MC) was synthesized using SBA-15 as a hard template and gelatin from bovine bone as carbon precursor. The carbon was treated at temperature of 900 °C. The MC was characterized by Gas Sorption Analyzer (GSA), and Transmission Electron Microscope (TEM). The Co, Ni and Pd were loaded onto the MC by impregnation method produced the Co/MC, Ni/MC and Pd/MC catalyst, respectively. The catalysts were characterized by Gas Sorption Analyzer. The activity of catalysts were tested in hydrocracking of waste lubricant. The result showed that the MC had a bimodal pore diameter distribution majority at around 3.85 and 6.58 nm with high surface area, and pore volume of 743.22 m<sup>2</sup>/g, and 1.17 cm<sup>3</sup>/g, respectively. The Co/MC, Ni/MC and Pd/MC catalyst had surface area of 702.68 m<sup>2</sup>/g, 636.19 m<sup>2</sup>/g, and 644.98 m<sup>2</sup>/g, respectively. The Pd/MC catalyst showed the highest catalytic activity in producing liquid fraction of 61.20 wt.% which consists of gasoline and diesel fractions of 52.33 and 8.87 wt.%, respectively.

**Keywords :** Carbon, Cobalt, Nickel, Palladium, Catalyst, Hydrocracking.