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# FUELS PRODUCTION FROM WASTE TIERS PYROLYSIS BY CATALYTIC HYDROCRACKING OVER NI SUPPORTED ZEOLITES PREPARED FROM THE STEEL INDUSTRY WASTE MATERIALS

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**As a response of fossil fuels crises, cleaner fuels are highly demanded. Also, numerous efforts and economics were exerted for the hazardous used car tiers disposals. This work is part of scientific project to establish a national technology for used tiers conversion to fuels through pyrolysis and hydrocracking processes. The pyrolysis has investigated by modelling using Arrhenius equation to determine the most effective activation energy and hence the suitable pyrolytic temperature. Effect of several factors such as the tiers cutting size, pyrolysis time and inert gas flow on the pyrolysis efficiency has been experimentally studied. The results showed that the optimum pyrolysis condition was to cut the tiers to pieces of 2 mm and heated up to 420 °C for 1 h with $N_2$ flow of 50 sccm. The produced pyrolysis oil has fractionated according to ASTM to different cuts of <70 °C to 360 °C to be used as reforming and hydrocracking source. The hydrocracking process would be soon studied to produce useful products such as bio-kerosene, bio-diesel etc. As a further environmental friendly consideration, the catalyst whose support is needed for the refining processes has been synthesized from the blast furnace bitch as steel industry waste. The prepared catalysts would be characterized using the usual tools such as XRD, TPR, TPO, XRF, HRTEM, BET, EDX and XRF. Finally the produced bio-fuels would be analyzed using different tools such as GC, HPLC, routine analysis to compare the bio-oils with the normal petroleum based fuels. Further examination of fuels performance in diesel engine would also be investigated to ensure the synthesized fuels ability and suitability for ignition.**

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