

[Catalytic pyrolysis of wasted fishing net over calcined scallop shells: Analytical Py-GC/MS study](#)

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J. Anal. Appl. Pyrol. 146 (2020) 104750

Abstract:

Activity of calcined scallop shell (CSS) for the catalytic pyrolysis of wasted fishing net (WFN) to the  $\epsilon$ -caprolactam monomer was investigated in a micro-furnace type temperature programmable pyrolyzer combined with a gas chromatography/mass spectrometry (Py-GC/MS) analysis system. Evolved gas analysis (EGA/MS) indicates that the peak temperature for the decomposition of WFN in the absence of catalysts was around 420–480 °C whereas the temperature decreased down to 380–420 °C in the presence of CSS or commercial CaO catalysts. The yield of  $\epsilon$ -caprolactam reached 66 wt.% in a catalytic depolymerization condition at 410 °C for 2 min with a 1:5 WFN/CSS weight ratio by using the Py-GC/MS system. Based on these experimental results, CSS should be an alternative catalyst for the recovery of the  $\epsilon$ -caprolactam monomer from the WFN.

\* Excerpted from online journal website (Click the title)

Frontier Labs Products used:

Multi-Shot Pyrolyzer (EGA/PY-3030D), UA<sup>+</sup>-5