

## COLD PLASMA OLIGOMERIZATION IN ARGON ATMOSPHERE FROM CARVACROL: PRODUCT FORMATION AND CHARACTERIZATION

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Carvacrol, a monoterpenoid sourced from sustainable materials like oregano, has been studied for its oxidation into compounds of increased value. This oxidation process employs a range of catalysts and oxidizing agents. Cold plasma oligomerization of carvacrol in an argon atmosphere presents an alternative to catalytic methods. From 3 mL of carvacrol, 46 mg of solid product (Pcrol) were obtained, achieving a  $35 \pm 0.5\%$  of selectivity. Surface examinations reveal a hydrophobic material with a meshed texture, while chemical characterization confirms the retention of functional groups, successful plasma oligomerization, and provides insights into the reaction mechanism. The results identify Pcrol as an oligomer and thermal analysis suggests it decomposes below  $300 \pm 2.11$  °C, likely due to its shorter oligomer chains.

**Keywords:** carvacrol, cold-plasma, oligomer

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