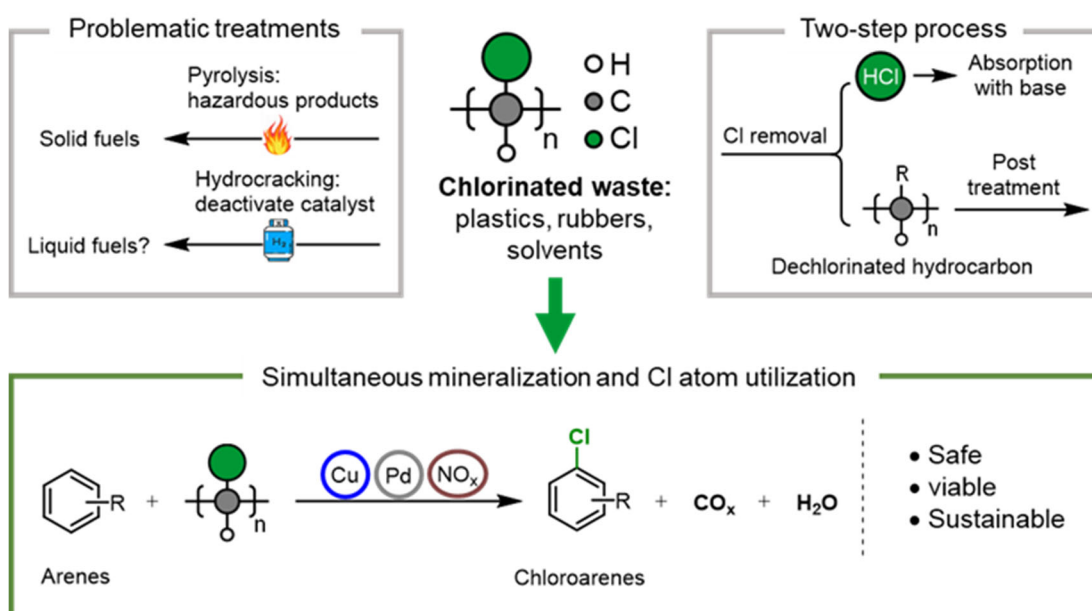


Upcycling chlorine-containing hydrocarbon waste streams



Summary diagram of the current methods developed for the possible elimination of chlorinated wastes and the proposed technology in which various chlorinated waste streams are employed as chlorination reagents for the synthesis of aryl chlorides.

Description

Chlorine-containing hydrocarbon compounds are widely used as plastics, rubbers, resins, solvents, and in the pharmaceutical and agrochemicals industry. However, their disposal through conventional approaches (landfill and incineration) leads to the formation of hazardous products with consequences for the environment. There is a need for a sustainable, scalable method to eliminate different chlorinated hydrocarbon wastes.

The technology is a novel process based on a tandem catalytic approach that uses chlorine containing hydrocarbon waste streams to synthesize valuable aryl chlorides without generating hazardous byproducts.

Advantages

The process is scalable and simultaneously eliminates both the chlorine and hydrocarbon components without the formation of toxic byproducts, whilst eliminating the need for special chlorination reagents.

Applications

- Waste management of plastics, pharmaceutical and agrochemicals industry.
- Upcycling chlorine-containing hydrocarbon including polymers to aryl chlorides.

Ref. Nr

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Keywords

Chlorine, chlorine containing hydrocarbon waste, upcycling

Intellectual Property

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Publications

 Mingyang Liu et al. Tandem catalysis enables chlorine-containing waste as chlorination reagents, *Nature Chemistry* volume 16, pages 700-708 (2024)

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