

The Laboratory for Organic and Inorganic Chemistry

Literature Seminar

Sunday, July 21st at 9:30 in Hall 1

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On the Topic of:

Clean Fuel Production by Chemical Recycling of e-Waste

Clean Fuel Production by Chemical Recycling of e-Waste

Clean fuel production from recycled e-waste represents an innovative and sustainable approach to managing electronic waste while addressing energy needs.¹ This process involves collecting and sorting e-waste, followed by pre-treatment to remove hazardous materials. Thermal processes break down the waste into syngas and through catalytic reactions it is converted into clean fuel (Fig. 1).² Chemical recycling of E-waste not only mitigates the environmental impact of e-waste but also produces valuable, renewable energy sources, contributing to a circular economy, reducing reliance on fossil fuels and assisting in minimizing carbon emissions.³

In this literature seminar, I will discuss the different methods to produce clean fuel and utilize nanomaterials for energy storage through chemical recycling of electronic waste.⁴

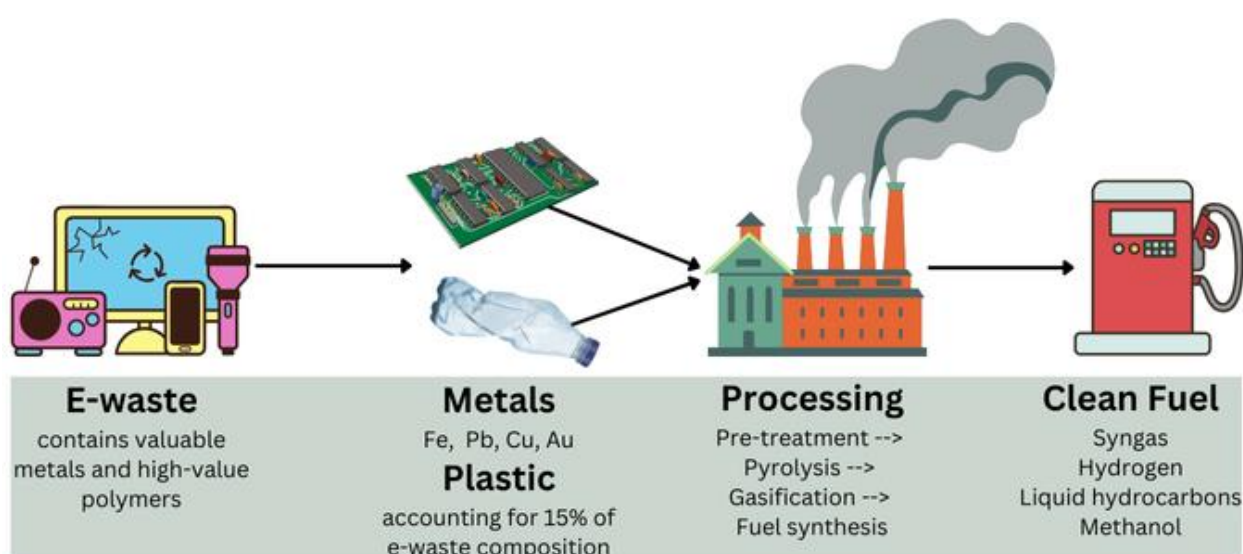


Figure 1. Scheme describing the process of clean fuel production by recycling e-waste

References

- (1) Arun, J.; Gopinath, K. P. Chemical Recycling of Electronic-Waste for Clean Fuel Production. In *E-waste Recycling and Management: Present Scenarios and Environmental Issues*; Khan, A., Inamuddin, Asiri, A. M., Eds.; Springer International Publishing: Cham, 2020; pp 111–126. https://doi.org/10.1007/978-3-030-14184-4_6.
- (2) Gurgul, A.; Szczepaniak, W.; Zabłocka-Malicka, M. Incineration, Pyrolysis and Gasification of Electronic Waste. *E3S Web Conf.* **2017**, *22*, 00060. <https://doi.org/10.1051/e3sconf/20172200060>.
- (3) Mangmeechai, A. The Life-Cycle Assessment of Greenhouse Gas Emissions and Life-Cycle Costs of e-Waste Management in Thailand. *Sustainable Environment Research* **2022**, *32* (1), 16. <https://doi.org/10.1186/s42834-022-00126-x>.
- (4) Seif, R.; Salem, F. Z.; Allam, N. K. E-Waste Recycled Materials as Efficient Catalysts for Renewable Energy Technologies and Better Environmental Sustainability. *Environ Dev Sustain* **2024**, *26* (3), 5473–5508. <https://doi.org/10.1007/s10668-023-02925-7>.

