

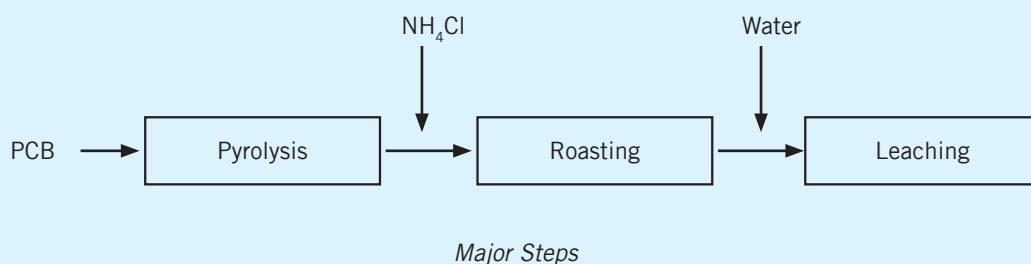
## 63. Title: E-waste plastic into Fuel and Metal Recovery

**Inventor:** Prof. Kamal K. Pant, Department of Chemical Engineering

**Keywords:** E-waste, Metal recovery

**Domain:** Renewable Energy

**Summary:** An integrated process has been developed for the conversion of E-waste into fuel and recovery of metals. This technology works on the principle of low-temperature roasting in the presence of ammonium chloride. The available technologies use hydrochloric acid which is toxic but the usage of ammonium chloride is nontoxic and non-corrosive in nature, so there is no issue of storage and transportation. Ammonium chloride at higher temperature breaks into ammonia and hydrochloric acid, from which hydrochloric acid reacts with metals to form water soluble metal chlorides. Water was used as a scrubber to absorb unreacted ammonia and hydrochloric acid. After roasting the residue mainly consists of metal chlorides which were leached with water to recover metals. The metal leach solution was then filtrated and analyzed for recovery of metal.



### Advantages:

- » Environment friendly process
- » Low temp. roasting technique
- » No emission of toxic gases.
- » This method is efficient to recover more than 95% of metal fraction.
- » Single step process to recover metal fraction

**Applications:** Plastic recycling Industries

**Scale of development:** A functional prototype process is developed and results are validated by testing in a Laboratory environment

**Technology Readiness Level:** 5

**IP Status:** Indian Patent Application 201911035031