Plastic materials are widely used in a variety of daily used products. Therefore, a strict control of the content of harmful metals in plastics has recently commenced as per new regulation in order to reduce their harmful effects to human beings, such as Restriction on the use of certain Hazardous Substances in Electrical and Electronics Equipment (RoHS). Hence, much attention is being given to development of a fast, reliable and inexpensive method for determination of heavy metals in plastic materials.

In our study; a simple open digestion system including wet-oxidation and extraction was used for the determination of lead, cadmium, chromium, and mercury in plastic material such as polyethylene and polypropylene. For digestion, a reagent containing nitric acid and sulfuric acid was used for all materials. Central composite design was also performed to optimization of reagents and sample amounts. Nitric acid and mixture of nitric and sulfuric acid were compared with each other from the standpoint of the effectiveness of metal recovery values. The use of nitric acid alone gave better recoveries for lead in polyethylene and polypropylene, because sulfuric acid caused lead sulfate precipitation [1]. These methods have given the highest recoveries of spiked lead (median 96%), cadmium (median 94%), chromium (median 82%), and mercury (median 90%).