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Kinetics of metals dissolution from different types of WEEE in $Na_2S_2O_8$ environment

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In the last couple of years the waste electrical and electronic equipment (WEEE) gathered attention as a very special section of waste due to its complex composition mainly consisting of valuable metals. Recovering metals from WEEE can provide an attractive additional income within the disposal process of end-of-life electric and electronic equipment. This paper aims to present a comprehensive study about the influence of pH, temperature and concentrations on the leaching of metals from different types of WEEE (LCD boards, wires and batteries scrap) in per-sulfate environment. Based on experimental results a reaction mechanism and the reaction kinetics were determined and quantified by means of complex kinetic models. Parameters of the developed shrinking core model under chemically controlled processes fitted to experimental results. The comparison of the measured and calculated mass of dissolved metals show good agreement so the developed model can be used to design the leaching subsystem of a metal recovering technology.

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