

Flotation Separation of Silica from Apatite and Surface Forces in Bubble-Particle Interaction:  
Role of pH and Cationic Amine Collector Contents

한요셉<sup>†</sup>  
한양대학교

(yosep@hanyang.ac.kr<sup>†</sup>)

Dodecylamine-hydrochloride (DAHC) was used as a collector for apatite recovery through flotation. The related properties were measured such as zeta potential, contact angle, and adsorption density. Maximum P2O<sub>5</sub> grade was achieved 23.7% at pH 3, but was lower at pH 7 regardless of the concentration. According to the extended Derjaguin-Landau-Verwey-Overbeek (DLVO) theory, the flotation performance is attributed to a hydrophobic attractive force that comes of the collector adsorption. Thus, more collectors were adsorbed on the silica than the apatite at pH 3. Therefore, the results revealed that optimization of the collector concentration and pH can selectively separate apatite from silica.

This work also was supported by the Korea Foundation for the Advancement of Science & Creativity (KOFAC), and funded by the Korean Government (MOE).