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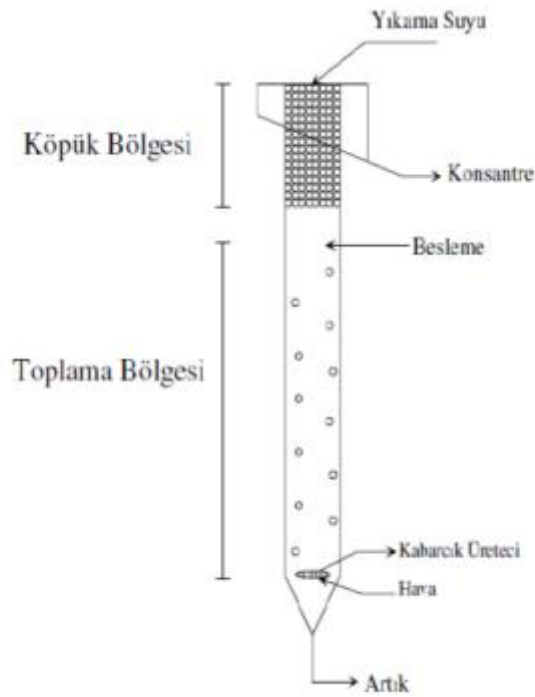
## *COLUMN FLOTATION*

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## 1. Introduction

Column flotation has been developed in order to prevent the problems faced from mechanical flotation cells and separate especially ultrafine particles efficiently from the medium without turbulence. Column flotation cells' form, having no mechanical stirring, having system for froth forming and wash water are the main differences comparing with mechanical flotation cells. In Figure 1, column flotation was shown schematically.



**Figure 1.** Schematic view of column flotation.

The ore is fed into column generally from 2/3 of column's height. The air is fed into the cell from the bottom of column that is slightly over the output of tailing. The columns of flotation are basically divided into two zones. The first zone is the collection region where the particles and bubbles encounter and it is provided the hydrophobic particles to attach to the bubbles. The second zone is the froth zone that is over the feed zone and the concentrate is obtained by cleaning the floated materials with wash water. Beyond these two zones, bubbles loaded by particles from collection zone and the particles washed by water from froth zone form the buffer zone. The flotation columns used in industry are generally square or circle and they have 12-15 of height and 0,5-3 m of diameter.

The parameters on column flotation;

- The volumetric amount of water: The amount of air covering any point of flotation column.
- Surface flow velocity: Surface flow velocities are defined as the amount of phase that passes through the unit cross-sectional area. Air flow rate, feed rate, wash water velocity expressed as "superficial" and calculated similarly.
- The height of froth zone
- The type and amount of frother
- Bias velocity: Bias is defined as the downstream net flow of water passing through the pulp-foam interface. The bias rate can be calculated by the difference between wash water and concentrate water on the foam zone or by the water balance between waste water and feed water in the collecting zone.

## 2. The aim of experiment and experimental procedure

The goal of experiment is identify of column flotation and its work principle. For this purpose, the examination will be realized by only using the water and frother in column on laboratory scale. Moreover, the column flotation will be demonstrated on pilot scale.

## 3. Requests

- Give some information about column flotation and examine the parameters.
- Draw flowsheet of a plant where the column flotation is used and give some information about for what reason and in which step it is used.