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Determination of Interfaces in Packed Columns by Using Sealed Sources"

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Process involved is the application of nuclear gauges to evaluate interfaces of bed in packed columns, which are used in different industries, petrochemicals, etc. In this case, different types of packing have been used within a PVC column in order to analyze the response of the attenuation of the gamma radiation that different materials with different density present when a radioactive source whose beam passes through them is used. Thus, the results obtained by the detector from the attenuation of radiation gives information about the distribution and height of the packing material within the column.

The present study performed in the laboratory consisted in the determination of phases within a column packed with material of different density, to which a gamma profiling was done by means of a source-detector system, in order to establish the interfaces of the packing distributed within the mentioned column. Cs-137 source (Activity = 10 µCi) was used, with a scintillation detector mobilized by a stepper motor (v = 6.6 m/s) and the packing consisted of several types: sand and gravel, fine gravel, clay, coarse gravel, fine sand, air and water. This experiment was carried out with 02 types of measurement: 2 measurements/s and 5 measurements/s and it was demonstrated that that this technique used to estimate packing heights and interfaces is very efficient and that with a profile made with more measurements per second, best results with lower percentages of variation are obtained.

Country/Organization invited to participate

Peru

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