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Forecasting Etching Behavior Silica Sand Using the Design of Experiments Method

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Abstract : The aim of this study is to show how the Design of Experiments Method (DOE) can be put into use as a practical approach for silica sand etching behavior modeling during its primary step of leaching. In the present work, we have studied etching effect on particle size during a primary step of leaching process on Algerian silica sand with florid acid (HF) at 20% and 30 % during 4 and 8 hours. Therefore, a new purity of the sand is noted depending on the time of leaching. This study was expanded by a numerical approach using a method of experiment design, which shows the influence of each parameter and the interaction between them in the process and approved the obtained experimental results. This model is a predictive approach using hide software. Based on the measured parameters experimentally in the interior of the model, the use of DOE method can make it possible to predict the outside parameters of the model in question and can give us the optimize response without making the experimental measurement.

Keywords : acid leaching, design of experiments method(DOE), purity silica, silica etching
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