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# Radioisotope Techniques for Detection of Coking in Liquid Flow through a Solid Phase in a Lab-Scale Distillation Column's.

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The petrochemical industry is one of the most important sectors of radioisotope technology applications. The distillation columns are considered as one of the most critical components in oil refineries. In packed bed distillation columns, the coking phenomenon is likely to occur inside the packing (solid) through which a liquid is flowing.

The aim of the proposed work is to try to address the coking phenomenon as a challenging issue in petrochemical industry by combining or integrating sealed radioactive source techniques and radiotracer techniques. The results correspond respectively to tests using two radioisotopes with gamma scanning technique and radiotracers. In the first approach the structural characteristics of a laboratory constructed distillation column have been investigated by using the Gamma scanning technique which consists in using a 60Co as a gamma ray sealed source associated to a NaI(Tl) detector. The second approach by radiotracers consists of an injection of an appropriate quantity of a specific radiotracer (99mTc) at the inlet of the process and studying its presence in the column.

Results shows that the radiotracer method may be a good approach for detecting the presence of coke in case of liquid flow through solid packing in distillation columns. Further, data will be useful in numerical modelling and validation by CFD simulations.

## Country/Organization invited to participate

Morocco

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