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Improved Procedures for Preparation of Argon-41 Gaseous Radiotracer from Solid Clathrate Compound

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Argon-41 can be a very good gaseous radiotracer for industrial applications if a sufficient amount of activity is produced from the reactor. The common procedures for preparing Argon-41 by irradiation of a quartz ampoule containing compressed argon gas give such low efficiency that the produced activity is not sufficient to compensate the ^{41}Ar decay during transportation to the field.

This paper introduces procedures for preparing argon in a solid clathrate compound with hydroquinol in which the concentration of argon reaches 7% by weight. The stability of the argon clathrate allows production ^{41}Ar in the reactor safely at the sufficient amount. In the field, radioactive argon gas is liberated from hydroquinol crystals by dissolving with water or alcohol solvent.
The experiments tracing gas flow using ^{41}Ar and methyl-^{82}Br as reference tracer were carried out to test the procedures.

The procedures have improved the efficiency of ^{41}Ar gaseous tracer production to the level of GBq activity for industrial application.

Country/Organization invited to participate

Vietnam

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