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Composite sorbent for attrition minimization

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ABSTRACT

Attrition is erosion by friction, i.e., wearing down of particles by friction due to water. Powdery materials such as titanium dioxide (TiO_2), a well known sorbent, suffers from attrition loss during metal ion recovery, mainly during regeneration of TiO_2 for reuse. To minimize the inorganic sorbent (TiO_2) loss, inorganic–organic composite (hybrid) sorbent was prepared from a radical initiated solution polymerization of acrylamide and freshly prepared titanium dioxide. Uranium uptake has been compared with titanium dioxide (freshly prepared), TiO_2–polymer composite and virgin polymer. The potential of this composite sorbents for the uranium recovery was ascertained.

Keywords: Composite sorbent; Titanium dioxide (TiO_2); Polyacrylamide (PAAm); Attrition loss; Reusability desalination; Column treatment

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