

Accepted Manuscript

Title: Removal of Gadolinium, a Neutron Poison from the Moderator System of Nuclear Reactors

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PII: S0304-3894(17)30593-9
DOI: <http://dx.doi.org/doi:10.1016/j.jhazmat.2017.08.004>
Reference: HAZMAT 18769

To appear in: *Journal of Hazardous Materials*

Received date: 7-4-2017
Revised date: 31-7-2017
Accepted date: 1-8-2017

Please cite this article as: A.L.Rufus, Padma S.Kumar, K.Jeena, S.Velmurugan, Removal of Gadolinium, a Neutron Poison from the Moderator System of Nuclear Reactors, Journal of Hazardous Materials <http://dx.doi.org/10.1016/j.jhazmat.2017.08.004>

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Removal of Gadolinium, a Neutron Poison from the Moderator System of Nuclear Reactors

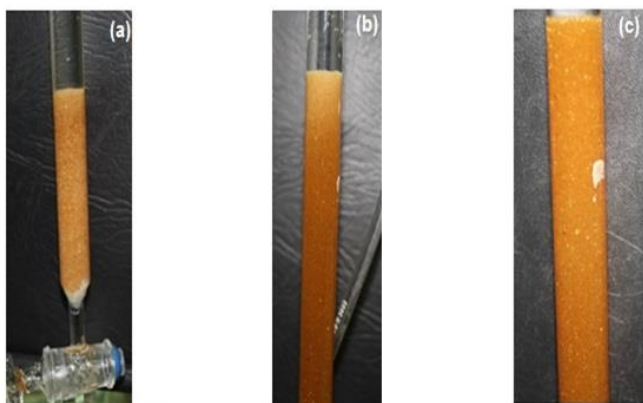
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Graphical abstract



Removal of gadolinium nitrate over mixed bed ion exchange column containing strong acid cation (SAC) resin and strong base anion (SBA) ion exchange resins followed by SAC ion exchange column connected in series (a) Precipitation of gadolinium as its hydroxide throughout the MB column (b) Gadolinium precipitate collected over SAC resin column (c) Gadolinium precipitate dissolved over SAC column towards the end of the experiment

Highlights

- A scheme for maximum utilization of ion exchange resin is proposed
 - Removal of $Gd(NO_3)_3$ over WBA resin results in only 20% utilization of its capacity
 - MB followed by SAC resin column prevents escape of Gd hydroxide to the system
 - Gd hydroxide precipitate contained on SAC column dissolves eventually
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