

Use of membrane emulsion span 80 and topo in uranium extraction and stripping / Kris Tri Basuki, Nurimaniwathy, Dian Puspita, Bambang E.H.B

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Abstrak

USE OF MEMBRANE EMULSION SPAN 80 AND TOPO IN URANIUM EXTRACTION AND STRIPPING. Membrane emulsion span 80 and TOPO used in uranium extraction and stripping has been done. The extraction was carried out by emulsion membrane H₃PO₄ in TOPO-Kerosene. The feed or external aqueous phase was uranium in HNO₃. The emulgator span-80 was used to obtain a stable emulsion membrane system. The influence factors were percentage of TOPO-Kerosene, time extraction, molarity of external aqueous phase and molarity of internal aqueous. After the emulsion membrane was formed, the extraction and stripping process was performed. The ratio volume feed : volume membrane phase equal to 1 : 1 and volume of 5 % TOPO-Kerosene : Volume 3 M H₃PO₄ equal 1 : 1 were used. The relative good yield were obtained at concentration of TOPO in Kerosene and 3 M H₃PO₄ was 5 %, molarity of internal aqueous phase equal to 1 M, molarity of external aqueous phase 3 M H₃PO₄ and time extraction equal to 10 minutes with the speed of emulsification was 8000 rpm. At this condition the extraction efficiency of uranium obtained was 97.8 %, the stripping efficiency 52.56 %, and the total efficiency was 53.80 %.

PENGGUNAAN MEMBRAN EMULSI SPAN 80 DAN TOPO UNTUK EKSTRAKSI DAN STRIPPING URANIUM. Telah dilakukan penelitian membran emulsi span 80 dan TOPO yang digunakan untuk ekstraksi uranium. Ekstraksi dengan membran emulsi H₃PO₄ dalam TOPO-Kerosene. Larutan umpan untuk fasa air eksternal adalah uranium dalam asam nitrat. Untuk memperoleh sistem emulsi yang stabil dipakai emulgator Span 80. Parameter yang berpengaruh adalah persen TOPO-Kerosene, molaritas fasa air internal H₃PO₄, molaritas fasa air eksternal HNO₃ dan waktu ekstraksi. Setelah diperoleh membran emulsi, kemudian dilakukan proses ekstraksi dan stripping, dengan rasio volume umpan : volume membran sebesar 1 : 1; volume 5% TOPO-Kerosene : volume 3M H₃PO₄ sebesar 1 : 1. Hasil relatif lebih baik diperoleh pada konsentrasi TOPO Kerosene: volume 3 M H₃PO₄ adalah 5 %, molaritas larutan fasa internal sebesar 1 M, molaritas larutan fasa eksternal adalah 3 M H₃PO₄ dan waktu ekstraksi sebesar 10 menit dengan kecepatan emulsi 8000 rpm. Pada kondisi ini diperoleh efisiensi ekstraksi uranium 97,8 %, efisiensi stripping 52,56 % dan efisiensi total adalah 53,8 %.