



DRILLING OIL-GAS

AGH 2016

**27th Conference
DRILLING-OIL-GAS**

Krakow, 08-10 June 2016

**DIRECTIONS OF DEVELOPMENT
OF OIL AND GAS INDUSTRY
IN POLAND AND IN THE WORLD**

ABSTRACT BOOK

- str.55 **Dan Maniu Duse, Carmen Sonia Duse - „OER IN GAS AND PETROLEUM ENGINEERING EDUCATION.”**
- str.56 **Jan Ziaja, Vasyl Movchan - „PULLING FORCE SIMULATION OF JET BITS IN RADIAL DRILLING TECHNOLOGY.”**
- str.57 **Szymon Kuczyński, Krystian Liszka, Mariusz Łaciak, Andrii Oliinyk, Robert Strods, Adam Szurlej - „TECHNOLOGICAL AND SAFETY ASPECTS OF CNG HOME FAST REFUELING UNITS.”**
- str.58 **Andrzej Gonet, Jerzy Fijał, Aleksandra Jamrozik, Stanisław Stryczek, Torleiv Bilstad - „KATEGORYZACJA ODPADÓW WIERTNICZYCH JAKO KRYTERIUM WYBORU METODY ICH DETOKSYKACJI, ODZYSKU I ZAGOSPODAROWANIA.”**
- str.59 **A. Jamrozik, E. Protasova, A. Gonet, T. Bilstad, R. Żurek - „CHARACTERISTICS OF OIL BASED MUDS AND INFLUENCE ON THE ENVIRONMENT.”**
- str.60 **Sławomir Wysocki, Stanisław Stryczek, Andrzej Gonet, Przemysław Gubała, Magdalena Gaczoł - „RECONSTRUCTION FLUID WITH NEW PT-86 POLYMER.”**
- str.61 **M.S. Tungatarova, M.B. Kurmanseiit , A. Kaltayev, A.B. Kuljabekov - „STUDY OF CHEMICAL KINETICS OF URANIUM MINING BY ACID LEACHING.”**
- str.62 **D.Ye. Aizhulov, A. Kaltayev - „THE STUDY OF ROLLFRONT PROPERTIES AND FORMATION MECHANISMS BY EXAMINING URANIUM DEPOSITS IN TIAN-SHIAN MEGAPROVINCE.”**
- str.63 **Sławomir Wysocki, Kinga Klima, Agnieszka Podborska - „BADANIA WPŁYWU STOPNIA JONOWOŚCI KOPOLIMERU POLI (AAM-CO-AMPSA) NA PARAMETRY SUSPENSJI BENTONITOWYCH.”**
- str.64 **Sławomir Wysocki, Anna Wójtowicz, Magdalena Gaczoł - „INFLUENCE OF IONIC HYDRATION'S INHIBITORS ON SWELLING OF CLAYS AND SHALES.”**
- str.65 **Jacek Hendel, Jan Macuda, Marzena Gancarz - „IMPLEMENTATION OF CASING-WHILE-DRILLING TECHNIQUE FOR DRILLING BOREHOLES THROUGH UNCONSOLIDATED FORMATIONS, CRUSHED DURING HARD COAL EXPLOITATION.”**
- str.66 **Andrii Oliinyk, Stanisław Nagy, Jan Macuda, Jacek Hendel - „SELECTED HYDRAULIC ISSUES OF GAS FLOW THROUGH SMALL TUBING E.G. MACARONI.”**

Authors/Autorzy

M.S. Tungatarova, M.B. Kurmanseit, A. Kaltayev,
A.B. Kuljabekov

Al-Farabi Kazakh National University, Almaty, Kazakhstan

„STUDY OF CHEMICAL KINETICS OF URANIUM MINING BY ACID LEACHING.” „Исследование кинетики процесса добычи урана серноокислотными растворами.”

Kazakhstan produce more than 40% of world Uranium and all of Uranium produced in Kazakhstan are mined by In-Situ leaching (ISL). The ISL involves recovering the minerals from ground by dissolving them and pumping the pregnant solution to the surface where the minerals can be recovered.

There are two different regimes of uranium leaching depending on ore mineralization and carbonization: acid, sulfuric acid or less commonly nitric acid, and carbonate. All of Kazakhstani uranium deposits are mined by acid leaching.

It is known, that mostly uranium ore contain tetra and hexavalent uranium oxide, and tetravalent uranium oxide hardly reacts with the acid. Solution of tetravalent uranium oxide by sulfuric acid requires oxidizers which transform tetravalent uranium oxide to hexavalent one. In present paper the influence of oxidants, such as Iron (III) Hydroxide and Manganese dioxide, on the Uranium recovery is investigated.

A model of the uranium mining process with detailed kinetics, taking into account the redox processes in the ore formation is proposed. Tetravalent uranium is oxidized by ferric hydroxides, and proceeds to the hexavalent state. However, this leads to a reduction in the formation of iron (III) hydroxide, which can recover manganese oxides. It was found that the presence of iron (III) hydroxide and manganese oxide in the formation significantly increases the recovery of uranium, which is consistent with practical results.