

## Bottle roll leach test for Temrezli uranium ore

**K. Çetin, M. Bayrak, A. İsbir Turan, E. Üçgül**

General Directorate of Mineral Research and Exploration, Ankara, Turkey

*E-mail address of main author: kamer.cetin@mta.gov.tr*

The bottle roll leach test is one of the dynamic leaching procedure which can meet in-situ mining needs for determining suitable working conditions and helps to simulate one of the important parameter; injection well design. In this test, the most important parameters are pulp density, acidic or basic concentration of leach solution, time and temperature. In recent years, bottle roll test is used not only for uranium but also gold, silver, copper and nickel metals where in situ leach (ISL) mining is going to be applied. For this purpose for gold and silver metal cyanide bottle roll tests and for uranium metal; acidic and basic bottle roll tests could be applied. The new leach test procedure which is held in General Directorate of Mineral Research and Exploration (MTA) of Turkey is mostly suitable for determining metal extraction conditions and recovery values in uranium containing ore bodies.

The tests were conducted with samples taken from Temrezli Uranium Ore located in approximately 200 km east of Turkey's capital, Ankara. Mining rights of Temrezli Ore is controlled 100% by Anatolia Energy Ltd. The resource estimate includes an indicated mineral resource of 10.827 Mlbs  $U_3O_8$  [~4160 t U] at an average grade of 1426 ppm [~1210 ppm U] and an additional inferred resource of 6.587 Mlbs of  $U_3O_8$  [~2530 t U] at an average grade of 904 ppm [~767 ppm U]. In accordance with the demand from Anatolia Energy bottle roll leach tests have been initiated in MTA laboratories to investigate the recovery values of low-grade uranium ore under in-situ leach conditions. Bottle roll leaching tests are performed on pulverized samples with representative lixiviant solution at ambient pressure and provide an initial evaluation of ore leachability with a rough estimate of recovery value. At the end of the tests by using 2 g/L  $NaHCO_3$  and 0.2 g/L  $H_2O_2$  more than 90% of uranium can pass into leach solution in 12 days.