



PRESS RELEASE (2019/03/25)

Successful Gold Leaching from a Gold Ore Using Bacteria Isolated from a Natural Gas Field

Gold is usually leached from gold ore using hazardous substances such as cyanide, mercury, aqua regia, etc. The other gold leaching techniques using low hazardous substances are therefore required. Assoc. Prof. Yuichi Sugai, Prof. Kyuro Sasaki and PhD candidate Ms. San Yee Khaing who belong to the faculty of engineering in Kyushu University succeeded in leaching gold from a gold ore using bacteria isolated from a natural gas field.

The brine water in natural gas field in Japan contains not only natural gas but also iodide in high concentration. The iodide-oxidising bacteria (IOB) which oxidise iodide (I^-) into iodine (I_2) inhabit the brine. Because gold can be dissolved in the mixture of iodide and iodine, Sugai et al. came up with the gold leaching from gold ore using IOB. Eight strains of IOB were isolated from a natural gas field and incubated in the culture medium containing nutrients, iodide and gold ore (gold grade: 0.26 wt%, pulp density: 3.3 w/v%) under 30°C. The strains oxidised iodide into iodine and triiodide was generated by chemical reaction. Triiodide dissolved gold from ore as gold diiodide. Three IOB strains successfully dissolved gold from ore completely within 30 days, in particular, the best strain dissolved gold completely within 5 days. Thus, the possibility of bacterial gold leaching using IOB was successfully demonstrated in this study. Bioleaching gold with iodide would likely be more environmentally and economically sustainable than traditional techniques.

This study was financially supported by a grant entitled “Engineering Research for Pioneering of a New Field” provided by the Faculty of Engineering, Kyushu University. The research achievement has been published online in Scientific Reports on March 12, 2019.

“IOB are bad bacteria in the gas field because they cause the corrosion of wells and pipes,” says Sugai “however, they can become good bacteria by considering their application with broader perspective because they have the special ability.”

For more information about this research, see [Gold Dissolution from ore with Iodide-oxidising Bacteria](#).

Scientific Reports,(2019) 9:4178, San Yee Khaing, Yuichi Sugai & Kyuro Sasaki: “Gold Dissolution from ore with Iodide-oxidising Bacteria”

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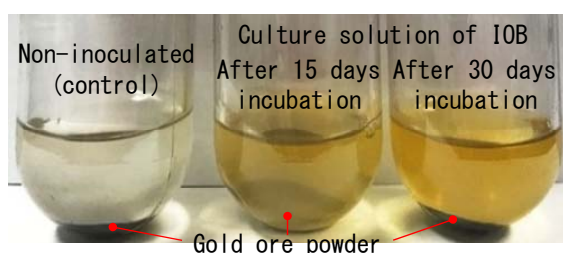


Figure.

During the incubation of IOB in the culture medium containing nutrients, iodide and gold ore, the IOB were oxidizing iodide into iodine, which in turn formed triiodide by chemical reaction. Subsequently, triiodide extracted gold from ore as gold diiodide. The colour of the culture solution changed to yellow which was colour of triiodide generated by the bacterial and chemical reactions.

【Contact】

Yuichi Sugai, PhD, Associate Professor
Department of Earth Resources Engineering, Faculty of Engineering
Tel : +81-92-802-3328
E-mail : sugai@mine.kyushu-u.ac.jp