HOKKAIDO UNIVERSITY

Title	Utilisation of acid-tolerant bacteria for base metal recovery under strongly acidic conditions
Author(s)	Takano, Chikara; Nakashima, Kazunori; Kawasaki, Satoru et al.
Citation	Extremophiles, 28, 45 https://doi.org/10.1007/s00792-024-01362-2
Issue Date	2024-09-24
Doc URL	https://hdl.handle.net/2115/96003
Rights	This version of the article has been accepted for publication, after peer review (when applicable) and is subject to Springer Nature's AM terms of use, but is not the Version of Record and does not reflect post-acceptance improvements, or any corrections. The Version of Record is available online at: http://dx.doi.org/10.1007/s00792-024-01362-2
Type	journal article
File Information	Supplementary Information_4.pdf

Hokkaido University Collection of Scholarly and Academic Papers : HUSCAP

Supplementary Information

Utilisation of acid-tolerant bacteria for base metal recovery under strongly acidic conditions

Extremophiles

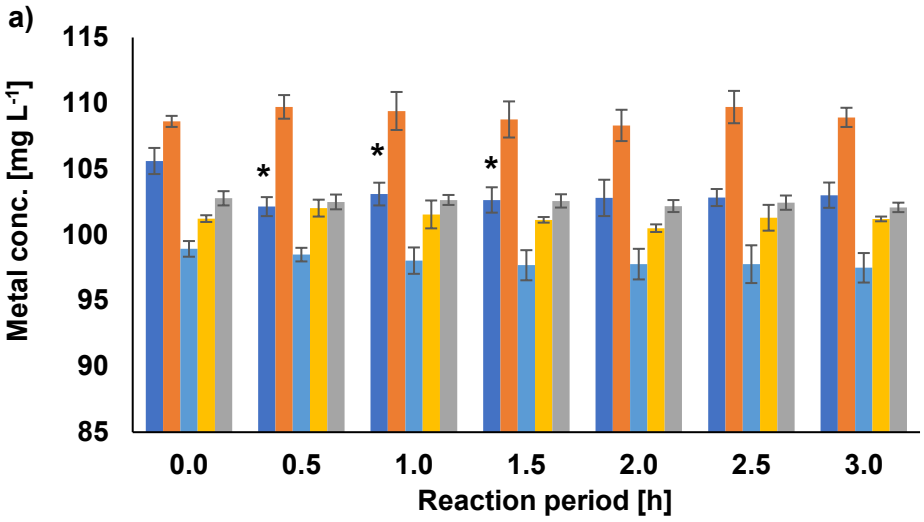
Chikara Takano, Kazunori Nakashima, Satoru Kawasaki, Hideki Aoyagi

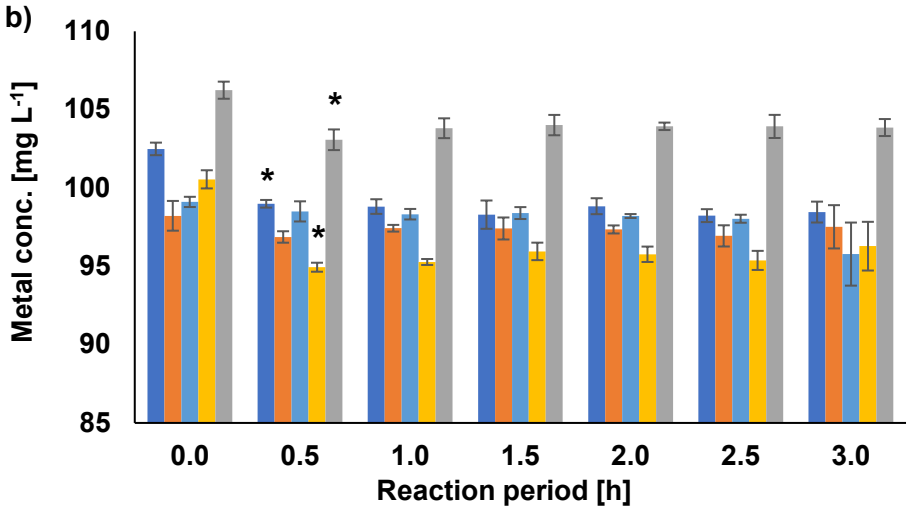
Corresponding author

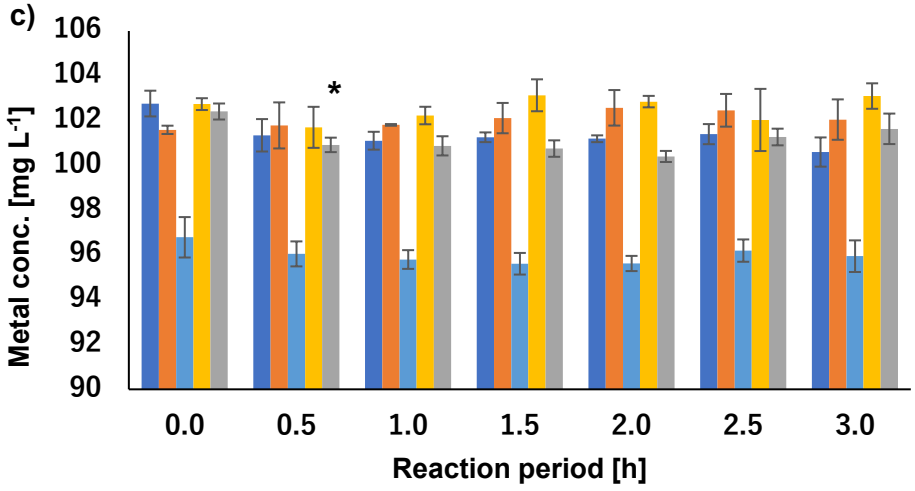
Hideki Aoyagi

Institute of Life and Environmental Sciences, University of Tsukuba, Tsukuba, Ibaraki 305-8572, Japan.

E-mail: aoyagi.hideki.ge@u.tsukuba.ac.jp


a)
Metal conc. [mg L-1]
115
110
105
100
95
90
85
*
*
*
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Reaction period [h]


b)
Metal conc. [mg L-1]
110
105
100
95
90
85
*
*
*
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Reaction period [h]


c)
Metal conc. [mg L-1]
106
104
102
100
98
96
94
92
90
*
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Reaction period [h]

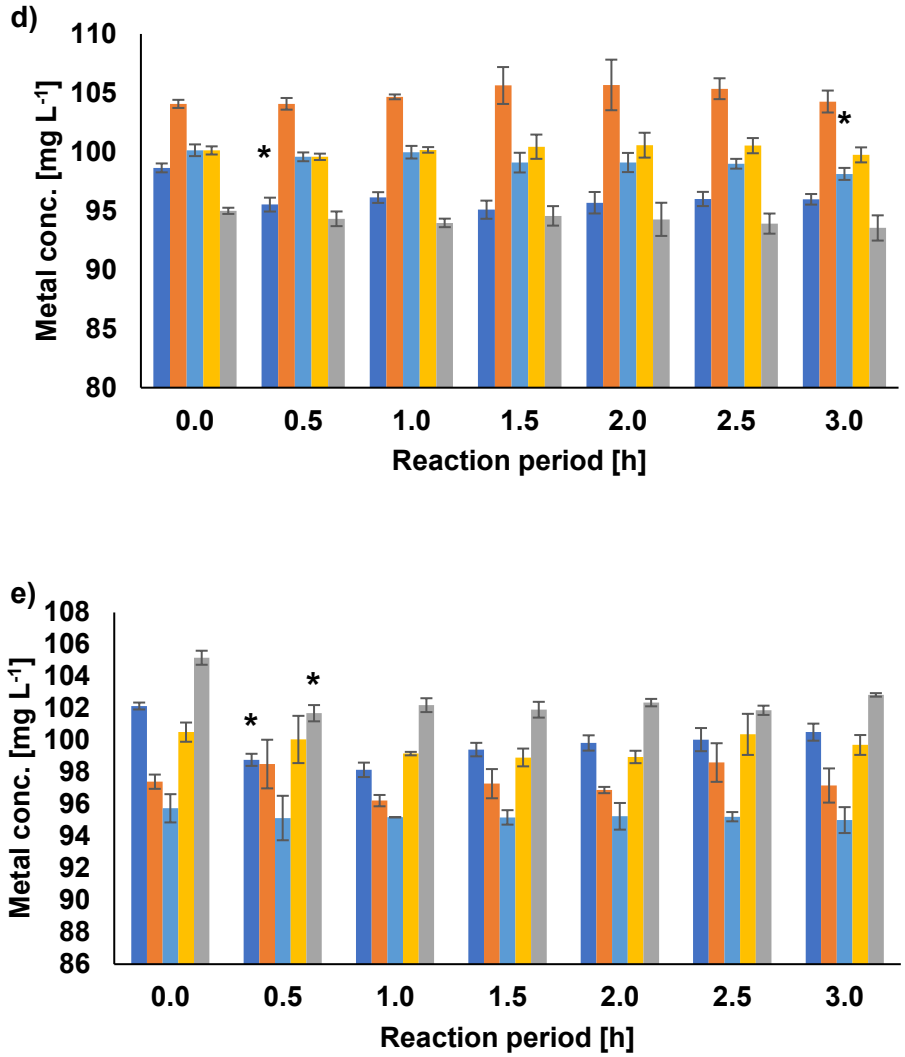


Fig. S1 Time course of metal concentration of simulated waste metal leachate.
a) *Comamonas* sp. HTL, b) *Micrococcus luteus* JCM1464, c) *Pseudomonas* sp. MS3, d) *Enterobacter* sp. MnA, e) *Priestia* sp. Mn7
Blue: Cu, Orange: Co, Light blue: Li, Yellow: Mn, Gray: Ni
Asterisk indicates significant difference (p-value < 0.05)

Optimum metal recovery treatment period was decided as followings for each strain based on the result: HTL: 1.5 h, JCM1464 0.5 h, MS3: 0.5 h, MnA: 3 h, Mn7: 0.5 h

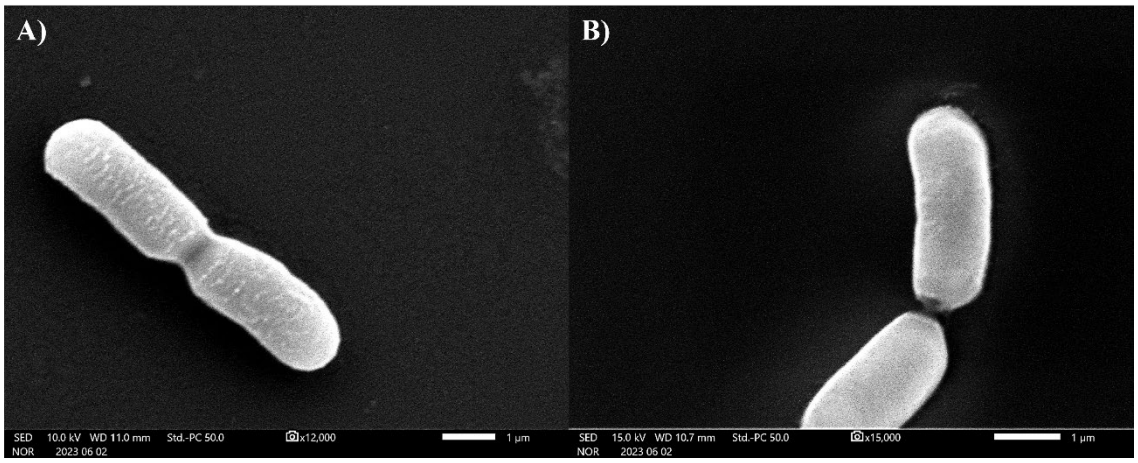


Fig. S2 Cell surface morphology of the strain Mn7 after 30 min exposure.

A) Simulated metal leachate containing 1000 mg L^{-1} of five metal species.

B) pH 1.5 solution without metal ions.

Surface matrix was formed only after exposure to simulated metal leachate.