

8

Referências bibliográficas

ADAMSON A, GAST. A. **Physical Chemistry of Surfaces**. Jhon Wiley & Sons Inc. Canadá. 6 Ed 1997. 784 p

AKSU Z. Equilibrium and kinetic modelling of cadmium(II) biosorption by *C. vulgaris* in a batch system: effect oftperature. **Separation and Purification Technology**. 21, p. 285–294, 2001.

AKSU, Z.; GÖNEN, F.; DEMIRCAN, Z. Biosorption of chromium(VI) ions by Mowital ® B30H resin immobilized activated sludge in a packed bed: comparison with granular activated carbon. **Process Biochemistry**. 38, p. 175-186, 2002

ALDRICH, C. Efect of ultrasonic treatment on zinc removal from hydroxide precipitates by dissolved air flotation. **Minerals Engineering**. 15, p. 1105–1111, 2002.

ALDRICH, C.; FENG, D. Removal of heavy metals from wastewater effluents by biosorptive flotation. **Minerals Engineering**. 13, p. 1129-1138, 2000.

ALEXANDROVA, I., GRIGOROV, L. precipitate and adsorbing colloid flotation od dissolved copper, lead and zinc ions. **Internacional Journal of Mineral Processing**. 48, p. 11-125, 1996.

AMERI, N. et al. Batch zinc biosorption by a bacterial nonliving *Streptomyces rimosus* biomass. **Water Research**. 33, (6), p. 1347-1354, 1999.

ANAND B, et al. Biobeneficiation of bauxite using *Bacillus polymyxa*: calcium and iron removal, **International Journal of Mineral Processing**. v 48, p. 51-60, 1996.

ANDRÉ et al. Sorption of heavy metals ions by the nonliving biomass of freshwater macrophytes. **Environmental Science Technology.** 33, p. 2213-2217, 1999.

ATKINSON, B.W.; BUX, F.; KASAN, H. Considerations for application of biosorption technology to remediate metal-contaminated industrial effluents. **Water S.A.** 24, p. 129-135, 1998.

BAIG T. H. et al. Adsorption of heavy metal ions by the biomass of Solanum elaeagnifolium (Silverleaf night-shade). **Proceedings of the 1999 Conference on Hazardous Research.** p. 131-139, 1999

BELL et al., the genus Rhodococcus. **Journal of Applied Microbiology.** 85, p. 195-210, 1998.

BLÁZQUEZ, G. et al. Removal of cadmium ions with olive stones: the effect of some parameters. **Process Biochemistry.** 2005.

CARMONA R. M.E., et al. Biosorption of chromium using factorial experimental design. **Process Biochemistry.** 40. p. 779-788, 2005.

CRINI G. Recent developments in polysaccharide-based materials used as adsorbents in wastewater treatment. **Progr. Polym. Sci.** 30, p. 38–70, 2005.

DA COSTA.; A C; FRANÇA, F. P. Cadmium Uptake by Biosorbent Seaweeds: Adsorption Isotherms and Some Process Conditions. **Separation Science and Technology.** 31,(17), p. 2373-2393. 1996.

DAVIS, T. A.; VOLESKY B.; MUCC, A. A review of the biochemistry of heavy metal biosorption by brown algae. **Water Research.** 37, p. 4311–4330, 2003.

DOYLE, F. Ion flotation-its potential for hydrometallurgical operations. **Internacional Journal of Mineral Processing.** xx, xxx, 2003.

FENG, D.; ALDRICH, C. Adsorption of heavy metals by biomaterial derived from the marine alga *Ecklonia maxima*. **Hydrometallurgy**. 73, p. 1-10, 2004.

FOGLER. S. **Elementos de ingeniería de las reacciones químicas**. Prentice Hall Inc. 3 Ed. 2001. 968p.

FUERSTENAU. M C., HAN K. N. Metal-surfactant precipitation and adsorption in froth flotation. **Journal of Colloid and Interface Science**. 256, p. 175–182, 2002.

GOMES, NEWTON CARLOS MARCIAL. **Imobilização de Metais por Fungos**. Tese de Doutorado, Instituto Paulo de Góes/Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brasil. 1999. 102p.

GEORGE P.; NGUYEN A.V.; JAMESON G.J. Assessment of true flotation and entrainment in the flotation of submicron particles by fine bubbles. **Minerals Engineering**. 17, p. 847–853, 2004.

HINZ, C. Description of sorption data with isotherm equations. **Geoderma**. 99, p. 225-243, 2001.

HO, Y.S. et al. Sorption of lead ions from aqueous solution using tree fern as a sorbent. **Hydrometallurgy**. 73, p. 55-61, 2004.

HUAMAN, P. **Biosorção de metais pesados utilizando Resíduo de Cocos nucifera**. Dissertação de mestrado, DCMM, PUC-Rio, 2005. 109p.

HÜSEYIN B.; LALE. M.; TÜRKER, R. Determination of Cu, Zn and Cd in water by FAAS after preconcentration by baker's yeast (*Saccharomyces cerevisiae*) immobilized on sepiolite. **Fresenius Journal Analytical Chemistry**. 363, p. 224–230, 1999.

Investigación. Centro de Investigación Científica. España: Universidad Autónoma de Madrid. Disponible en:
<http://www.adi.uam.es/docencia/elementos/spv21/sinmarcos/elementos/zn.html>

IYER, A.; MODY, K.; JHA, B. Biosorption of heavy metals by a marine bacterium. **Marine Pollution Bulletin**. 50, p. 340-343, 2005.

JURKIEWICZ, K. Adsorptive bubble separation of zinc and cadmium cations in presence of ferric and aluminum hydroxides. **Journal of Colloid and Interface Science**. 286, p. 559-563, 2005

KADUKOVÁ J.; VIRČÍKOVA E. Comparison of differences between copper bioaccumulation and biosorption. **Environment International**. 31, p. 227– 232, 2005.

KARTAL S. N.; IMAMURA YUJI. Removal of copper, chromium, and arsenic from CCA-treated wood onto chitin and chitosan. **Bioresource Technology**. 96, p. 389–392, 2005.

KEFALA; ZOUBOULIS, A.I.; MATIS, K.A. Biosorption of cadmium ions by Actinomycetes and separation by Flotation. **Environmental pollution**. 104, p. 283-293, 2005.

KELLY E.G., SPOTISWOOD D.J. **Introduction to Mineral Processing**, John Wiley and Sons, Inc., New York, 1982.

KRATOCHVIL, D.; VOLESKY, B.; DEMOPOULOS, G. Optimizing Cu removal / recovery in a biosorption column. **Water Resource**. 31, (9), p. 2327-2339. 1997.

KIRK, R.; OTHMER, D. **Enciclopédia de Tecnología Química**. México: Unión Tipográfica Editorial Hispano-Americana, 1962.

LANG, S.; PHILP, J.C. Surface-active lipids in rhodococci. **Antonie van Leeuwenhoek**. 74, p. 59–70, 1998.

LAZARIDIS, N.K. et al. Copper removal from effluents by various separation techniques. **Hydrometallurgy**.74, p. 149–156, 2004.

LEJA, J. **Surface Chemistry of Froth Flotation**. Plenum Press, New York, 1981, 747p.

LIU, H.L. et al. Biosorption of Zn(II) and Cu(II) by the indigenous *Thiobacillus thiooxidans*, **Chemical Engineering Journal**. 97, p. 195–201, 2004.

LIU, Q; ZHANG ; LASKOWSKI, J.S. The adsorption of polysachharides onto mineral surfaces and acid / base interaction. **Int. J. Miner. Process.** 60, p. 229-245, 2000.

LODI, A. et al. Cadmium, zinc, copper, silver and chromium(III) removal from wastewaters by *Sphaerotilus natans*. **Bioprocess Engineering**. 19, p.197-203, 1998.

LYKLEMA, J. Adsorption of small ions. In Partfitt, G.D. and Rochester, C. H., **Adsorption from solution at the solid/liquid interface**. Academic Press, Inc., 1983, p. 223.

LYER A.; KALPANA M.; BHAVANATH J. Biosorption of heavy metals by a marine bacterium. **Marine Pollution Bulletin**. 50, p. 340–343, 2005.

LOUKIDOU, M. et al. Equilibrium and kinetic modeling of chromium (VI) biosorption by Aeromonas caviae. **Colloids and Surfaces A**. 242, p. 93-104, 2004.

MAMERI et al. Batch zinc biosorption by a bacterial nonliving *Streptomyces rimosus* biomass. **Water Research**. 30, (6). p. 1347-1354, 1999.

MANAHAN, S. E. **Environmental Chemistry**. Michigan: Lewis Publishers, p. 583, 1991.

MADIGAN, M.; MARTINKO, J. BROCK M. **Biology of Microorganisms**. Prentice Hall Inc. 8 Ed, 1997. 1010p.

MARTINS R.J.; PARDO R.; BOAVENTURA R. Cadmium (II) And Zinc(II) Adsorption By The Aquatic Moss *Fontinalis Antipyretica*: Effect Of Temperature, pH And Water Hardness. **Water Research**. 38, p. 693–699, 2004.

MATIS K.A. et al., A hybrid flotation—microfiltration process for metal ions recovery. **Journal of Membrane Science.** 247, p. 29–35, 2005.

MATIS K.A., ZOUBOULIS A.I. Flotation of cádmium – loaded biomass. **Biotechnology and Bioengineering.** 44, p. 354-360, 1994.

MERCK. Publicaciones. Madrid: manual Merck en Castellano. Disponível em:<http://www.msd.es/publicaciones/mmerck/MM_01_04.htm> Acesso em: 15 març. 2005.

MESQUITA L.M.S., **Bioflotação de Hematita e Quartzo – Um Estudo de Seletividade.** Tese de Doutorado, PUC-Rio, RJ, Brasil. 2000. 93p.

MESQUITA, LINS F.F.; TOREM M.L, Interaction of a hydrophobic bacterium strain in a hematite-quartz flotation System. International **Journal of Mineral Processing.**, v. 71, p. 31– 44, 2003.

MIHEE, L.; KYUHYUK, K.; JUNG-HEON, L. Removal of Heavy Metals with Activated Carbon and Curdlan Beads. **Department of Chemical Engineering Chosun University.** 2001.

MISRA M, BUKKA S. CHEN M. The effect of growth medium of *Thiobacillus ferrooxidans* on pyrite flotation. **Minerals Engineering.** 9, No. 2, p. 157-168, 1996.

MOZES N AMORY D, LEONRD A, ROUXHET, Surface Properties of Microbial Cells and their Role in Adhesion and Flocculation. **Colloids and Surfaces.** 42, p. 313 – 329, 1989.

MOHAPATRA, H.; GUPTA, R. Concurrent sorption of Zn(II), Cu(II) and Co(II)by Oscillatoria angustissima as a function of pH in binaryand ternary metal solutions. **Bioresource Technology.** 2005.

MONSER, L.; ADHOUM, N. Modified activated carbon for the removal of cooper, zinc, chromium and cyanide from wastewater. **Separation and Purification Technology.** 26, p. 137-146, 2002.

MOZES N AMORY D, LEONRD A, ROUXHET, Surface Properties of Microbial Cells and their Role in Adhesion and Flocculation. **Colloids and Surfaces.** v. 42, p. 313 – 329, 1989.

NAMITA DEO, NATARAJAN. "Interactions of *Bacillus polymixa* with Oxide Minerals with Reference to Mineral Beneficiation and Environmental Control. **Minerals Engineering.** 10 No 12 pp 1339 – 1354, 1997

NASERNEJAD B. et al. Comparison for biosorption modeling of heavy metals (Cr (III), Cu (II), Zn (II)) adsorption from wastewater by carrot residues. **Process Biochemistry.** 40, p. 1319–1322, 2005.

NEVES, S. Classificação eletrônica dos elementos, Caratinga, MG. Disponível em: <<http://www.tabelaperiodica.hpg.ig.com.br/>>. Acesso em: 10 mar. 2005.

NIES, D. Microbial heavy-metal resistance. **Applied Microbiology and Biotechnology.** 51, p. 730-750. 1999.

NORTON, L.; BASKARAN, K.; McKENZIE, T. Biosorption of zinc from aqueous solutions using biosolids. **Advances in Environmental Research.** 2003

NOURBAKHSH M. et al., A comparative study of various biosorbents for removal chromium (VI) ions from industrial waste waters. **Process Biochemistry.** 29, p. 1-5, 1994.

PACHECO, A.C.; TOREM, M.L. Remoção de As (v) de soluções muito diluídas por flotação de colóides. Encontro nacional de tratamento de minérios e metalurgia extractiva, 2002, Recife. **Anais do XIX Encontro nacional de tratamento de minérios e metalurgia extractiva.** Recife: D2D Studios, v. 2, p. 400, 2002.

PAGNANELLI, F.; ESPOSITO A.; TORO L.; VEGLIÓ. F. Metal speciation and pH effect on Pb, Cu, Zn and Cd biosorption onto *Sphaerotilus natans*: Langmuir-type empirical model. **Water Research.** 37, p. 627–633, 2003.

PAVLOVSKA, G.; STAFILOV, T.; CUNDEVA, K. Comparison of hexamethylenedithiocarbamate and tetramethylenedithiocarbamate as flotation reagents for the concentration of zinc. **Fresenius Journal Anal.Chem.** In: Springer-Verlag. 361, p. 213–216, 1998.

PAVLOVIC S, BRANDÃO P. Adsorption of Starch, Amilose, Amilopectine and Glucose monomer and their Effect on the Flotation of Hematite and Quartz. **Minerals Engineering.** 16, p. 1117 – 1122, 2003.

PEARSE, M.J. An overview of the use of chemical reagents in mineral processing. **Minerals Engineering.** 18, p. 139–149, 2005.

PINAZZA, L.; BORSARI, F. **Revista de agronegócios da FGV.** Portugal. 2004. Disponível em:
< http://www.anda.org.br/portug/artigos/agroanalysis_pagina50e51.pdf>. Acessa em: 15 mar, 2005.

PUMPEL, T.; SCHINNER, F. Metal biosorption: a Structure **Data Space.** **Research in Microbiol.** 148, (6), p. 514-515, 1997.

RAICHUR A.M.; VIJAYALAKSHMI, S.P. The effect of nature of raw coal on the adhesion of bacteria to coal surface. **Fuel.** 82, p. 225-231, 2003.

RAMÍREZ, C.M., **Biosorção de Cr³⁺ e Cr⁶⁺ por *Saccharomyces cerevisiae*.** Tese de Doutorado, UFRJ, RJ, Brasil. 2005. 138p

RASCON, A. Study of the binding mechanism of heavy metals by inactivated tissues of *Solanum elaeagnifolium*. **Proceedings of the 2000 conference on hazardous waste research.** p. 361-369,2000.

RIJNAARTS H et al, Reversibility and Mechanism of Bacterial Adhesion. **Colloids and Surfaces B: Biointerfaces.** v. 4, p. 5 – 22, 1995.

SADOWSKI, Z.; GOLAB, Z.; SMITH, R.W. Flotation of *Streptomyces pilosus* after lead accumulation. **Biotechnology and Bioengineering.** 37, p. 955-959, 1990.

SCORZELLI, B.I. **Remoção de Cádmio e Zinco de soluções Muito diluídas por flotação Iônica.** Tese de Doutorado. Pontifícia Universidade Católica do Rio de Janeiro. 1999. 169p.

SUDHA, R.; EMILIA, T. Studies on the enhancement of Cr (VI) biosorption by chemically modified biomass of *Rhizopus nigricans*. **Water Research.** 36, p. 1224-1236, 2002.

SELATNIA et al. Biosorption de Cd²⁺ from aqueous solution by a NAOH-treated bacterial dead *Streptomyces rimosus* biomass. **Hydrometallurgy.** 75, p. 11-24, 2004.

SEMINÁRIO DE SEGURANÇA EM ENGHARÍA QUÍMICA. Compostos químicos. Universidade de Coimbra, Portugal. Disponível em: < <http://www.eq.uc.pt/~mena3/index.html> >. Acesso em: 10 mar. 2005.

SHARMA, A. DASB, K. HANUMANTHA RAO, K.S.E. FORSSBERG, Surface Characterization of *Acidithiobacillus ferrooxidans* Cells Grown Under Different Conditions. **Hydrometallurgy.** 71, p. 285–292, 2003.

SHASHIKALA A. RAICHUR A. Role of interfacial phenomena in determining adosrption of *Bacillus polymixa* onto Hematite and Quartz, **Colloids and Surfaces B: Biointerfaces** v. 24, p. 11 – 20. 2002.

SIVACI R.; SIVACI A.; MÜNEVVER SÖKMEN. Biosorption of cadmium by *Myriophyllum spicatum* L. and *Myriophyllum triphyllum* orchard. **Chemosphere.** 56, p. 1043–1048, 2004.

STRATTON, HM. et al. Cell surface hydrophobicity and mycolic acid composition of *Rhodococcus* strains isolated from activated sludge foam. **Journal of Industrial Microbiology & Biotechnology.** 28, p. 264 – 267, 2002.

TOBIN, J. M.; WHITE, C.; GADD, G. M. Metal Accumulation by Fungi. **Applications Environ. Biotech. J. Ind Microbiol.** 13, p. 126-130, 1994.

TOREM M.L., CASQUIERA R. **Flotação Aplicada à Remoção de Metais Pesados.** Série Tecnologia Ambiental No 28 CETEM. Rio de Janeiro, 2003.

TOREM M.L., et al. **Utilização de bioreagentes no beneficiamento mineral.** 59º congresso anual da ABM. São Paulo. 2004.

VECCHIO, A. Et al. Heavy metal biosorption by bacterial cells. **Fresenius Journal Analytical Chemistry.** p. 338-342, 1998.

VAN DER WAL A., WNORDE A., A J.B. ZEHNDER B, J. LYKLEMA A
Determination of the Total Charge In the Cell Walls gf Gram-Positive Bacteria
Colloids and Surfaces B: Biointerfaces v. 9, p. 81-100, 1997.

VOLESKY, B. **Biosorption of Heavy Metals.** Florida, CRC Press. 1990.

VOLESKY, B. Biosorption process simulation tools. **Hydrometallurgy.** 71, p. 179–190, 2003.

WÄLTERMANN M. et al. Mechanism of lipid-body formation in prokaryotes:
how bacteria fatten up. **Molecular Microbiology.** 55 (3), p. 750–763, 2005.

WANG, J. et al. Parameters for Removal of Toxic Heavy Metals by Water Milfoil (*Myriophyllum spicatum*). **Environmental Contamination Toxicology.** 57, p. 779-786, 1996.

WILLS **Mineral Processing Technology** Butterworth Heinemann 6 Ed.
1997. 486 p.

ZHANGA, G. et al. Zinc adsorption on Na-rectorite and effect of static magnetic field on the adsorption. **Applied Clay Science.** 29, p. 15– 21, 2005.

ZOUBOULIS A.I et al. The use of biosurfactants in flotation: application for the removal of metal ions. **Minerals Engineering.** xx, p. xxx-xxx, 2003.

ZOUBOULIS A.I.; LOUKIDOU M.X.; MATIS K.A. Biosorption of toxic metals from aqueous solutions by bacteria strains isolated from metal-polluted soils. **Process Biochemistry.** 39, p. 909–916, 2004.

ZOUBOULIS A.I.; MATIS, K.A., STALIDIS, G.A. Parameters influencing flotation in removal of metals ions. **International Journal of Environmental Studies.** 6, p. 183-196, 1990.