

- biosorbent and flame atomic absorption spectrometry," *Microchemical Journal*, vol. 109, pp. 16-22, 2013.
<http://dx.doi.org/10.1016/j.microc.2012.05.030>
- [6] V. Obuseng, F. Nareetsile & H. M. Kwaambwa, "A study of the removal of heavy metals from aqueous solutions by *Moringa oleifera* seeds and amine-based ligand 1,4-bis[N,N-bis(2-picoyl)amino]butane," *Analytica Chimica Acta*, vol. 730, pp. 87-92, 2012.
<http://dx.doi.org/10.1016/j.aca.2012.01.054>
- [7] A. Al Bsoul, L. Y. Zeatoun, A. Abdelhay & M. Chiha, "Adsorption of copper ions from water by different types of natural seed materials," *Desalination and Water Treatment*, vol. 52, pp. 5876-5882, 2014.
<http://dx.doi.org/10.1080/19443994.2013.808593>
- [8] M. Bilal, J. A. Shah, T. Ashfaq, S. M. H. Gardazi, A. A. Tahir, A. Pervez, H. Haroon & Q. Mahmood, "Waste biomass adsorbents for copper removal from industrial wastewater—A review," *Journal of Hazardous Materials*, vol. 263, pp. 322-333, 2013.
<http://dx.doi.org/10.1016/j.jhazmat.2013.07.071>
- [9] Ö. Demirbaş, A. Karadağ, M. Alkan & M. Doğan, "Removal of copper ions from aqueous solutions by hazelnut shell," *Journal of Hazardous Materials*, vol. 153, pp. 677-684, 2008.
<http://dx.doi.org/10.1016/j.jhazmat.2007.09.012>
- [10] Moh, M. O. H. M., "Drinking Water Quality Standard [Online]. Available: <http://kmam.moh.gov.my/public-user/drinking-water-quality-standard.html> [Accessed 15/6/2015].
- [11] A. Abia, M. Horsfall Jr. & O. Didi, "The use of chemically modified and unmodified cassava waste for the removal of Cd, Cu and Zn ions from aqueous solution," *Bioresource Technology*, vol. 90, pp. 345-348, 2003.
[http://dx.doi.org/10.1016/S0960-8524\(03\)00145-7](http://dx.doi.org/10.1016/S0960-8524(03)00145-7)
- [12] N. Basci, E. Kocadagistan & B. Kocadagistan, "Biosorption of copper (II) from aqueous solutions by wheat shell," *Desalination*, vol. 164, pp. 135-140, 2004.
[http://dx.doi.org/10.1016/S0011-9164\(04\)00172-9](http://dx.doi.org/10.1016/S0011-9164(04)00172-9)
- [13] P. Senthilkumar, S. Ramalingam, V. Sathyaselvabala, S. D. Kirupha & S. Sivanesan, "Removal of copper (II) ions from aqueous solution by adsorption using cashew nut shell," *Desalination*, vol. 266, pp. 63-71, 2011.
<http://dx.doi.org/10.1016/j.desal.2010.08.003>
- [14] N. Feng, X. Guo & S. Liang, "Adsorption study of copper (II) by chemically modified orange peel," *Journal of Hazardous Materials*, vol. 164, pp. 1286-1292, 2009.
<http://dx.doi.org/10.1016/j.jhazmat.2008.09.096>
- [15] E.S. El-Ashtoukhy, N. Amin & O. Abdelwahab, "Removal of lead (II) and copper (II) from aqueous solution using pomegranate peel as a new adsorbent," *Desalination*, vol. 223, pp. 162-173, 2008.
<http://dx.doi.org/10.1016/j.desal.2007.01.206>
- [16] H. Chen, G. Dai, J. Zhao, A. Zhong, J. Wu & H. Yan, "Removal of copper(II) ions by a biosorbent—Cinnamomum camphora leaves powder," *Journal of Hazardous Materials*, vol. 177, pp. 228-236, 2010.
<http://dx.doi.org/10.1016/j.jhazmat.2009.12.022>
- [17] A. H. Al-Dujaili, A. M. Awwad & N. M. Salem, "Biosorption of cadmium (II) onto loquat leaves (*Eriobotrya japonica*) and their ash from aqueous solution, equilibrium, kinetics, and thermodynamic studies," *International Journal of Industrial Chemistry*, vol. 3, pp. 1-7, 2012.
<http://dx.doi.org/10.1186/2228-5547-3-22>
- [18] K. M. Helen & L. R. Miranda, "*Moringa oleifera*—A solid phase extractant for the removal of copper, nickel and zinc from aqueous solutions," *Chemical Engineering Journal*, vol. 158, pp. 188-199, 2010.
<http://dx.doi.org/10.1016/j.cej.2009.12.039>
- [19] K. J. Abaliwano, A. K. Ghebremichael & L. G. Amy, "Application of the Purified *Moringa oleifera* Coagulant for Surface Water Treatment," *WaterMill Working Paper Series*, vol. 5, pp. 1-22, 2008.
<http://dx.doi.org/10.1016/j.biortech.2010.02.030>
- [20] U. Farooq, J. A. Kozinski, M. A. Khan & M. Athar, "Biosorption of heavy metal ions using wheat based biosorbents – A review of the recent literature," *Bioresource Technology*, vol. 101, pp. 5043-5053, 2010.
- [21] M. N. Othman, M. P. Abdullah & Y. F. Abd. Aziz, "Removal of Aluminium from Drinking Water," *Sains Malaysiana*, vol. 39, pp. 51-55, 2010.
- [22] N. A. Eman, A. M. Suleyman, M. S. Hamzah, A. Md Zahangir & M. S. Mohd Ramlan, "Production of natural coagulant from *Moringa oleifera* seed for application in treatment of low turbidity water," *Journal of Water Resource and Protection*, vol. 2, pp. 1-8, 2010.
<http://dx.doi.org/10.4236/jwarp.2010.21001>
- [23] S. Kawamura, "Effectiveness of natural polyelectrolytes in water treatment," *Journal of American Water Works Association*, pp. 88-91, 1991.
- [24] N. Ali, C. Tan & E. Makky, "Impact of *Moringa oleifera* Cake Residue Application on Waste Water Treatment: A Case Study," *Journal of Water Resource and Protection*, vol. 6 (7), 1-11, 2014.
- [25] H. Farrokhzadeh, E. Taheri, A. Ebrahimi, A. Fatehizadeh, M. V. Dastjerdi & B. Bina, "Effectiveness of *Moringa oleifera* powder in removal of heavy metals from aqueous solutions," *Fresenius Environmental Bulletin*, vol. 22, 2013.



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