

## REFERENCES

- Abdul Khalil, H. P., Ireana Yusra, A. F., Bhat, A. H., & Jawaid, M. (2010). Cell wall ultrastructure, anatomy, lignin distribution, and chemical composition of Malaysia cultivated kenaf fiber. *Industrial Crops and Products* , 31, 113-121.
- Aggarwal, P., & Dollimore, D. (1996). A comparative study of the degradation of different starches using thermal analysis. *Talanta*, 43, 1527-1530.
- Aggarwal, P., & Dollimore, D. (1998). A thermal analysis investigation of partially hydrolyzed starch. *Thermochimica Acta* , 319, 17-25.
- Ago, M., Endo, T., & Hirotsu, T. (2004). Crystalline transformation of native cellulose from cellulose I to cellulose II polymorph by a ball-milling method with specific amount of water. *Cellulose* , 11, 163-167.
- Ahmad, F. B., & Williams, P. A. (1998). Rheological properties of sago starch. *Journal Agricultural Food Chemistry* , 46, 4060-4065.
- Ahmad, F. B., Williams, P. A., Doublier, J.-L., Durand, S., & Buleon, A. (1999). Physicochemical characterization of sago starch. *Carbohydrate Polymers* , 38, 361-370.
- Alexander, L. (1969). *X-ray Diffraction Methods in Polymer Science*. New York: John Wiley.
- Alvarez, V. A., & Vacquez, A. (2004). Thermal degradation of cellulose derivatives/starch blends and sisal fiber biocomposites. *Polymer Degradation and Stability* , 84, 13-21.
- Alvarez, V. A., & Vacquez, A. (2006). Influence of fiber chemical modification procedure on the mechanical properties and water absorption of Mater-Bi sisal fiber composites. *Composite , Part A* 37, 1672-1680.
- Alves, V. D., Mali, S., Beleia, A., & Grossmann, M. V. (2007). Effect of glycerol and amylose enrichment on cassava starch film properties. *Journal of Food Engineering* , 78, 941-946.
- Anders, A., & Zimmermann, H. (1987). A comparison of the thermal degradation behaviours of polyvinyl acetate, polyvinyl alcohol and polyvinyl chloride. *Polymer Degradation and Stability* , 18 (2), 111-122.
- answers.com* (2011). Retrieved 1 21, 2011, from <http://www.answers.com/topic/oryza-sativa-1>

- Arvanitoyannis, I., Biliaderis, C. G., Ogawa, H., & Kawasaki, N. (1998). Biodegradable films made from low-density polyethylene (LDPE), rice starch and potato starch for food packaging applications: Part 1 . *Carbohydrate Polymers* , 36 (2), 89-104.
- ASTM D1695-07. (2007). *Standard Terminology of Cellulose and Cellulose Derivatives* .
- Averous, L., & Boquillon, N. (2004). Biocomposites based on plasticized starch: Thermal and mechanical behaviours. *Carbohydrate Polymer* , 56, 111-122.
- Bamboo*. (2011). Retrieved 2 3, 2011, from Wikipedia: <http://en.wikipedia.org/w/index.php?title=Bamboo&printable=yes>
- BeMiller, J. N., & Whistler, R. L. (1996). Carbohydrates. In O. R. Fennema (Ed.), *Food Chemistry* (pp. 157-223). Boca Raton, Florida: CRC Press Taylor and Francis Group.
- BeMiller, J. N., & Whistler, R. L. (2009). *Starch: Chemistry and Technology*. Academic Press.
- Benedict, C. V., Cook, W. J., Jarrett, P., Cameron, J. A., Huang, S. J., & Bell, J. P. (1983). Fungal degradation of polycaprolactones. *Journal of Applied Polymer Science* , 28, 327-334.
- Bhatnagar, A., & Sain, M. (2005). Processing of cellulose nanofiber reinforced composites. *Journal of Reinforced Plastics and Composites* , 24 (12), 1259-1268.
- Bledzki, A. K., & Gassan, J. (1999). Composites reinforced with cellulose based fibers. *Progress in Polymer Science* , 24, 221-274.
- Boesel, L. F., Mano, J. F., & Reis, R. L. (2004). Optimization of the formulation and the mechanical properties of starch based partially degradable bone cements. *Journal of Materials Science: Materials in Medicine* , 15, 73-83.
- Bogoeva-Gaceva, G., Avella, M., Malinconico, M., Buzarovska, A., Grozdanov, A., Gentile, G., et al. (2007). Natural Fiber Eco-Composites. *Polymer Composites* , 28 (1), 98-107.
- Borysiak, S., & Doczekalska, B. (2005). X-ray diffraction study of pine wood treated with NaOH. *Fibers and Textiles* , 13 (5), 87-89.
- Bourtoom, T., & Chinnan, M. S. (2008). Preparation and properties of rice starch-chitosan blend biodegradable films. *LWT - Food Science and Technology* , 41 (9), 1633-1641.
- Briassoulis, D. (2004). An overview on the mechanical behaviour of biodegradable agricultural films. *Journal of Polymer and the Environment* , 12 (2), 65-81.

- Bullona, A., Colonna, P., Planchot, V., & Ball, S. (1998). Starch granules: Structure and Biosynthesis. *International Journal of Biological Macromolecules* , 23, 85-112.
- Buluh\_minyak*. (2011). Retrieved 2 3, 2011, from Wikipedia: [http://ms.wikipedia.org/wiki/Buluh\\_minyak](http://ms.wikipedia.org/wiki/Buluh_minyak)
- Cao, Y., Shibata, S., & Fukumoto, I. (2006). Mechanical properties of biodegradable composites reinforced with bagasse fiber before and after alkali treatments. *Composite Part A* , 37, 423-429.
- Cao, Y., Sakamoto, S., & Goda, K. Effects of heat and alkali treatments on mechanical properties of kenaf fibers. *16th International Conference on Composite Materials*, (pp. 1-4). Japan.
- Chandra, R., & Rustgi, R. (1998). Biodegradable Polymers. *Progress in Polymer Science* , 23 (7), 1273-1335.
- Chartoff, R. P. (1997). Thermoplastic Polymers. In E. A. Turi (Ed.), *Thermal Characterization of Polymeric Materials* (pp. 483-743). San Diego: Academic Press.
- Chen, J. Y., & Liu, F. (2010). Bast Fibers: From Plants to Products. In B. P. Singh (Ed.), *Industrial Crops and Uses* (pp. 308-315). CAB International.
- Chen, Y., Cao, X., Chang, P. R., & Huneault, M. A. (2008). Comparative study on the films of PVA/pea starch nanocrystals and PVA/native pea starch. *Carbohydrate Polymers* , 73, 8-17.
- Chielini, E., Cinelli, P., Fernandes, E. G., Kenawy, E. S., & Lazzeri, A. (2001). Gelatin based blends and composites. Morphological and thermal mechanical characterization. *Biomacromolecules* , 2, 806-811.
- Chiellini, E., Corti, A., D'Antone, S., & Solaro, R. (2003). Biodegradation of polyvinyl alcohol based materials. *Progress in Polymer Science* , 28, 963-1014.
- Cinelli, P., Chiellini, E., & Imam, S. H. (2008). Hybrid composite based on polyvinyl alcohol and fillers from renewable resources. *Journal of Applied Polymer Science* , 109, 1684-1691.
- Cho, M., & Park, B. (2011). Tensile and thermal properties of nanocellulose reinforced polvinyl alcohol nanocomposites. *Journal of Industrial and Engineering Chemistry* , 17, 36-40.
- Chuayjuljit, S., Hosililak, S., & Athisart, A. (2009). Thermoplastic cassava starch/sorbitol-modified montmorillonite nanocomposites blended with low-density polyethylene: Properties and biodegradability study. *Journal of Metals, Materials and Minerals* , 19 (1), 59-65.

- Corradini, E., Imam, S. H., Agnelli, J. A., & Mattoso, L. H. (2009). Effect of coconut, sisal and jute fibers on the properties of starch/gluten/glycerol matrix. *Journal of Polymer and the Environment* , 17, 1-9.
- Cuq, B., Gontard, N., & Guilbert, S. (1997). Thermal properties of fish myofibrillar protein-based films as affected by moisture content. *Polymer* , 38, 2399-2405.
- Das, K., Ray, D., Bandyopadhyay, N. R., Gupta, A., Sengupta, S., Sahoo, S., et al. (2010). Preparation and characterization of cross-linked starch/polyvinyl alcohol green films with low moisture absorption. *Ind. Eng. Chem. Res.* , 49, 2176-2185.
- Das, M., & Chakraborty, D. (2006). Influence of alkali treatment on the fine structure and morphology of bamboo fibers. *Journal of Applied Polymer Science* , 102, 5050-5056.
- Das, M., & Chakraborty, D. (2006). Influence of mercerization on the dynamic mechanical properties of bamboo, a natural lignocellulosic composite. *Ind. Eng. Chem. Res.* , 45, 6489-6492.
- DeFloor, I., Dehing, I., & Delcour, J. A. (1998). Physicochemical properties of cassava starch. *Starch* , 50, 58-64.
- Dias, A. B., Muller, C. M., Larotondo, F. D., & Laurindo, J. B. (2010). Biodegradable films based on rice starch and rice flour. *Journal of Cereal Science* , 51, 213-219.
- Dibbern-Brunneli, D., & Atvars, T. D. (2000). Thermal transitions of polyvinyl alcohol hydrogel sensed by a fluorescent probe. *Journal Applied Polymer Science* , 75 (6), 815-824.
- di Franco, C. R., Cyras, V. P., Busalmen, J. P., Ruseckaite, R. A., & Vazquez, A. (2004). Degradation of polycaprolactone/starch blends and composites with sisal fiber. *Polymer Degradation and Stability* , 86, 95-103.
- Discover the many uses of the Roselle plant.* (2010, 17). Retrieved 12 12, 2010, from Garden Voices - Community in Bloom:  
[http://www.nparks.gov.sg/blogs/garden\\_voices/index.php/2010/01/07/discover-the-many-uses-of-the-roselle-plant/](http://www.nparks.gov.sg/blogs/garden_voices/index.php/2010/01/07/discover-the-many-uses-of-the-roselle-plant/)
- Dutt, D., Upadhaya, J. S., Singh, B., & Tyagi, C. H. (2009). Studies on hibiscus cannabinus and hibiscus sabdariffa as an alternative pulp blend for softwood: An optimization of Karft delignification process. *Industrial Crops and Products* , 29, 16-26.
- Eliasson, A.-C., & Tatham, A. (2001). Cereal Starch and Proteins. In D. A. Dendy, & B. J. Dobraszczyk, *Cereal and Cereal Products (Chemistry and Technology)*. Aspen Publication.

- Exova. (2010). Retrieved 2 15, 2011, from X-ray Diffraction: <http://www.exova.com/pjarma-technical-articles/285-x-ray-diffraction>
- Flach, M. (1997). Yield potential of the sago palm and its realization. In K. Tan (Ed.), *1st International Sago Symposium*, (pp. 157-177). Kuala Lumpur.
- Flieger, M., Kantorova, M., Prell, A., Rezanka, T., & Votruba, J. (2003). Biodegradable Plastics from Renewable Sources. *Folio Microbiol.* , 48 (1), 27-44.
- Follain, N., Joly, C., Dole, P., & Bliard, C. (2005). Mechanical properties of starch based materials. I. Short review and complementary experimental analysis. *Journal of Applied Polymer Science* , 97, 1783-1794.
- Ford, E. N., Mendon, S. K., Thames, S. F., & Rawlins, J. W. (2010). X-ray diffraction of cotton treated with neutralized vegetable oil-based macromolecular crosslinkers. *Journal of Engineered Fibers and Fabrics* , 5 (1), 10-20.
- Franco, C. M., Ciacco, C. F., & Tavares, D. Q. (1998). Studies on the susceptibility of granular cassava and corn starches to enzymatic attack. Part 2: Studies on the granular structure of starch. *Starch* , 40, 29-32.
- French, A. D., & Johnson, G. P. (2007). Cellulose Shapes. In J. R. Brown, & I. M. Saxena (Eds.), *Cellulose: Molecular and Structural Biology* (pp. 257-284). Springer.
- Galant, D. J., Bewa, H., Buy, Q. H., Bouchet, B., Szyllit, O., & Sealy, L. (1982). On ultra structural and nutritional aspects of some tropical tuber crops. *Starch* , 34, 255-262.
- Goheen, S. M., & Wool, R. P. (1991). Degradation of polyethylene-starch blends in soil. *Journal of Applied Polymer Science* , 42 (10), 2691-2701.
- Gomez-Leyva, J. F., Costa, L. A., Muraira, I. G., Espino, H. S., Ramirez-Cervantes, F., & Andrade- Gonzalez, I. (2008). Multiple shoot generation of roselle (*hibiscus sabdariffa* L.) from a shoot apex culture system. *International Journal of Botany* , 4 (3), 326-330.
- Gordon, S. H., Imam, S. H., & Greene, R. V. (1996). Starch-based plastics-measurement of biodegradability. In J. C. Salamone (Ed.), *Polymeric Materials Encyclopedia* (pp. 7885-7901). Boca Raton: CRC Press.
- Griffin, G. J. (1994). *Chemistry and Technology of Biodegradable Polymers*. Suffolk, United Kingdom: Chapman and Hall.
- (2009). Chemistry and Characteristics of Dietary and Functional Fiber. In S. S. Gropper, J. L. Smith, & J. L. Groff, *Advanced Nutrition and Human Metabolisms*. Wadsworth: Cengage Learning.

- Guohua, Z., Ya, L., Cuilan, F., Min, Z., Caiqiong, Z., & Zongdao, C. (2006). Water resistance, mechanical properties, and biodegradability of methylated-cornstarch/polyvinyl alcohol blend film. *Polymer Degradation and Stability*, *91*, 703-711.
- Han, X., Chen, S., & Hu, X. (2009). Controlled released fertilizer encapsulated by starch/polyvinyl alcohol coating. *Desalination*, *240*, 21-26.
- Han, Y., & Han, S. (2008). Dynamic mechanical properties of natural fiber/polymer biocomposites: The effect of fiber treatment with electron beam. *Macromolecular Research*, *16* (3), 253-260.
- (2004). Lignin. In T. Hatakeyama, & H. Hatakeyama, *Thermal Properties of Green Polymers and Biocomposites* (p. 8). Kluwer Academic Publishers.
- hibiscus sabdariffa* var. *altissima*. (2011). Retrieved 1 30, 2011, from Thai Encycropedia: <http://203.172.205.22/web/thaiEncycropedia/book17/b17p17/htm>
- Hoa, D. T. (2008). Pretreatment of lignocellulosic biomass for enzymatic hydrolysis. *AJSTD*, *25* (2), 341-346.
- Hoover, R. (2001). Composition, molecular structure, and physicochemical properties of tuber and root starches: A Review. *Carbohydrate Polymers*, *45*, 253-267.
- Ibrahim, M. M., El-Zawawy, W. K., & Nassar, M. A. (2010). Synthesis and characterization of polylvinyl alcohol/nanospherical cellulose particle films. *Carbohydrate Polymers*, *79*, 694-699.
- Imam, S. H., Cinelli, P., Gordon, S. H., & Chiellini, E. (2005). Characterization of biodegradable composite films prepared from blends of polyvinyl alcohol, corn starch and lignocellulosic fibers. *Journal of Polymers and the Environment*, *13* (1), 47-55.
- International Rice Research Institute (IRRI)*. (2011). Retrieved 1 28, 2011, from Breeding program management. In: Rice breeding course: <http://www.knowledgebank.irri.org/ricebreedingcourse/bodydefault.htm#Grain-quality.htm>
- Introduction to Fourier Transform Infrared Spectroscopy*. (2010). Retrieved 10 13, 2010, from ThermoNicolet: <http://mmrc.caltech.edu/FTIR/FTIRinfo.pdf>
- Ishiaku, U. S., Pang, K. W., Lee, W. S., & Mohd Ishak, Z. A. (2002). Mechanical properties and enzymatic degradation of thermoplastic and granular sago starch filled poly(e- caprolactone). *European Polymer Journal*, *38*, 393-401.
- Ito, T., Arai, Y., & Hisajima, S. (1979). Utilization of sago starch. *Japanese Journal of Tropical Agriculture*, *23*, 48-56.

- Jain, S., Kumar, R., & Jindal, U. C. (1992). Mechanical behaviour of bamboo and bamboo composites. *Journal of Materials Science* , 27, 4598-4604.
- Jang, B. C., Huh, S. Y., Jang, J. G., & Bae, Y. C. (2001). Mechanical properties and morphology of the modified HDPE/starch reactive blend. *Journal of Applied Polymer Science* , 82, 3313-3320.
- Jansson, C., Westerbergh, A., Zhang, J., Hu, X., & Sun, C. (2009). Cassava, a potential biofuel crop in the People's Republic of China. *Applied Energy* , 86, S95-S99.
- Jayasekara, R., Harding, I., Bowater, I., Christie, G. B., & Lonergan, G. T. (2004). Preparation, surface modification and characterization of solution cast starch/PVA blended films. *Polymer Testing* , 23, 17-27.
- Jenkin, P. J., & Donald, A. M. (1995). The influence of amylose on starch granule structure. *International Journal of Biological Macromolecules* , 17, 315-321.
- John, M. J., & Anandjiwala, R. D. (2007). Recent developments in chemical modification and characterization of natural fiber reinforced composites. *Polymer Composites* , 29 (2), 187-207.
- John, M. J., & Thomas, S. (2008). Biofibres and Biocomposites. *Carbohydrate Polymers* , 71, 343-364.
- (1998). Polysaccharides (Plant & Algal). In D. K. Kaplan, *Biopolymers from Renewable Resources*. Springer-Verlag.
- Karim, A. A., Tie, A. P.-L., Manan, D. M., & Zaidul, I. S. (2008). Starch from the Sago (Metroxylon sagu) palm tree - properties, prospects, and challenges as a new industrial source for food and other Uses. *Comprehensive Reviews in Food Science and Food Safety* , 7, 215-228.
- Kawabata, A., Sawayama, S., Nagashima, N., del Rosario, R., & Nakamura, M. (1984). Some physicochemical properties of starches from cassava, arrowroot and sago. *Journal Japanese Society of Starch Science* , 31, 224-232.
- Kenaf (Hibiscus cannabinus L.)*. (2011). Retrieved 1 20, 2011, from Wikipedia: <http://en.wikipedia.org/wiki/Kenaf>
- Kenaf*. (2011). Retrieved 1 5, 2011, from Pixie Hollow Farms: <http://pixiehollowfarms.com/kenaf.htm>
- Kumar, A., Srivastava, A., Galaev, I. Y., & Maltiasson, B. (2007). Smart Polymers: Physical forms and bioengineering application. *Progress in Polymer Science* , 32 (10), 1205-1237.

- Kumbar, S. G., Kulkarni, A. R., Dave, A. M., & Animabha, T. M. (2001). Encapsulation efficiency and release kinetics of solid and liquid pesticides through urea formaldehyde crosslinked starch, guar gum + guar gum matrices. *Journal of Applied Polymer Science* , 82, 2863-2866.
- Lacerda, L. G., Azevedo, J. A., Filho, M. A., Demiate, I. M., Schnitzler, E., Vandenberghe, L. P., et al. (2008). Thermal characterization of partially hydrolyzed cassava starch granules. *Brazilian Archives of Biology and Technology* , 51 (6), 1209-1216.
- Larotonda, F. D., Matsui, K. N., Soldi, V., & Laurindo, J. B. (2004). Biodegradable films made from raw and acetylated cassava starch. *Brazilian Archives of Biology and Technology* , 47 (3), 447-484.
- Lawton, J. W. (1996). Effect of starch type on the properties of starch containing films. *Carbohydrate Polymers* , 29, 203-208.
- Lee, T. S., Rahman, W. A., Rahmat, A. R., & Mokhtar, M. (2011). Determination of thermal stability and activation energy of polyvinyl alcohol-cassava starch blends. *Carbohydrate Polymers* , 83 (1), 303-305.
- Li, X. (2004). Physical, chemical and mechanical properties of bamboo and its utilization potential for fiberboard manufacturing. *MSc Dissertation* .
- Li, X., Tabil, L. P., & Panigrahi, S. (2007). Chemical treatments of natural fiber for use in natural fiber reinforced composites : A Review. *Journal Polymer and the Environment* , 15, 25- 33.
- Lilholt, H., & Lawther, J. M. (2000). Natural Organic Fibers. In T. W. Chou (Ed.), *Comprehensive Composite Materials: Fiber Reinforcements and General Theory of Composites* (Vol. 1, pp. 303-325). New York: Elsevier.
- Lim, E. T. (1991). *A review on sago processing and other related research on sago from 1980-1990*. Sarawak: Department of Agriculture Malaysia.
- Liu, H., Xie, F., Yu, L., Chen, L., & Li, L. (2009). Thermal processing of starch based polymers. *Progress in Polymer Science* , 34, 1348-1368.
- Liu, P., Yu, L., Wang, X., Li, D., Chen, L., & Li, X. (2010). Glass transition temperature of starches with different amylose/amylopectin ratios. *Journal of Cereal Science* , 51, 388-391.
- Liu, W., Mohanty, A. K., Drzal, L. T., Askel, P., & Misra, M. (2004). Effects of alkali treatment on the structure, morphology and thermal properties of native grass fibers as reinforcements for polymer matrix composites. *Journal of Materials Science* , 39, 1051-1054.



- Lu, J., Wang, T., & Drzal, L. T. (2008). Preparation and properties of microfibrillated cellulose polyvinyl alcohol composite materials. *Composites Part A: Applied Science and Manufacturing* , 39, 738-746.
- Lu, Y., Weng, L., & Cao, X. (2006). Morphological, thermal and mechanical properties of ramie-crystallites reinforced plasticized starch biocomposites. *Carbohydrate Polymer* , 63, 198-204.
- Mansikkamaki, P., Lahtinen, M., & Rissanen, K. (2007). The conversion from cellulose I to cellulose II in NaOH mercerization performed in alcohol-water systems: An x-ray powder diffraction study. *Carbohydrate Polymer* , 68, 35-43.
- Mansur, H. S., Orefice, R. L., & Mansur, A. A. (2004). Characterization of polyvinyl alcohol/polyethylene glycol hydrogels and PVA derived hybrids by small angle x-ray scattering and FTIR spectroscopy. *Polymer* , 45, 7193-7202.
- Mao, L., Imam, S. H., Gordon, S., Cinelli, P., & Chiellini, E. (2002). Extruded corn starch-glycerol-polyvinyl alcohol blends: Mechanical properties, morphology and biodegradability. *Journal of Polymers and the Environment* , 8 (4), 205-211.
- Marten, F. L., & Zvanut, C. W. (1992). Manufacture of Polyvinyl Acetate for Polyvinyl Alcohol and Hydrolysis of Polyvinyl Acetate to Polyvinyl Alcohol. In C. A. Finch (Ed.), *Polyvinyl Alcohol Developments*. Chichester: Wiley
- Marten, F. L., & Zvanut, C. W. (1992). Hydrolysis of polyvinyl acetate to polyvinyl alcohol. In C. A. Finch (Ed.), *Polyvinyl Alcohol - Developments* (pp. 57-66). Chichester: John Wiley.
- Maruyama, K., Takeuchi, K., & Tanizaki, Y. (1989). Activation parameters for degradation of polyenes produced in heated polyvinyl alcohol film. *Polymer* , 30 (3), 476-479.
- Mergaert, J., Webb, A., Anderson, C., Wouters, A., & Swings, J. (1993). Microbial degradation of poly(3-hydroxybutyrate) and poly(3-hydroxybutyrate-co-3-hydroxyvalerate) in soils. *Applied Environmental Microbiology* , 59, 3233-3238.
- Metcalf, C. R. (1960). *Anatomy of Monocotyledons I. Gramineae*. Oxford: Clarendon Press.
- Meyer, K. H., & Misch, L. (1937). Constitution of the crystallized part of cellulose. VI. Positions of atoms in the spatial model of cellulose. *Helv. Chim. Acta* , 20, 232-244.
- Meyers, M. A., Chen, P. Y., Lin, A., & Seki, Y. (2008). Biological Materials: Structure and mechanical properties. *Progress in Material Science* , 53 (1), 1-206.
- Mishra, S., & Rai, T. (2006). Morphology and functional properties of corn, potato and tapioca starches. *Food Hydrocolloids* , 20, 557-566.

- Modibbo, U. U., Aliyu, B. A., & Nkafamiya, I. I. (2009). The effect of mercerization media on the physical properties of local plant bast fibers. *International Journal of Physical Science* , 4 (11), 698-704.
- Moharram, Y. G., Abou-Samaha, O. R., & Bekheet, M. H. (1998). Destructive and Non- Destructive Analytical Methods in Starch Analysis. In D. L. Wetzel, & G. Charalambous (Eds.), *Developments in Food Science - Instrumental Methods in Food and Beverage Analysis* (Vol. 39, pp. 49-99). Elsevier.
- Mohee, R., & Unmar, G. (2007). Determining biodegradability of plastic materials under controlled and natural composting environments. *Waste Management* , 27, 1486-1492.
- Mohmod, A. L., & Mustafa, M. T. (1992). Variation in anatomical properties of three Malaysian bamboos from natural stands. *Journal of Tropical Forest Science* , 5 (1), 90-96.
- Moorthy, S. N., Wenham, J. E., & Blanshard, J. M. (1996). Effect of solvent extraction on the gelatinization properties of starch and flour of five cassava varieties. *Journal Science Food Agriculture* , 72, 329-336.
- Moorthy, S. N. (2002). Physicochemical and functional properties of tropical tuber starches: A Review. *Starch* , 54, 590-592.
- Morain, J. L., Alvarez, V. A., Cyras, V. P., & Vacquez, A. (2008). Extraction of cellulose and preparation pf nanocellulose from sisal fibers. *Cellulose* , 15, 149-159.
- Mossello, A. A., Harun, J., Shamsi, S. R., Resalati, H., Md Tahir, P., Ibrahim, R., et al. (2010). A review of literature related to Kenaf as an alternative for pulpwoods. *Agricultural Journal* , 5 (3), 131-138.
- Mukherjee, G. S. (2009). Calorimetric characterization of membrane materials based on polyvinyl alcohol. *Journal of Thermal Analysis and Calorimetry* , 96 (1), 21-25.
- Muller, R.-J. (2003). Biodegradability of Polymers: Regulations and Methods for Testing. In A. Steinbuechel, & M. Hofrichter (Eds.), *Biopolymer* (Vol. 10 (General Aspects and Special Applications), pp. 365-373). Wiley-VCH.
- Murase, N., Gonda, K., & Watanabe, T. (1986). Unfrozen compartmentalized water in gels and its anomalous crystallization during warming. *Journal of Physical Chemistry* , 90 (21), 5420-5426.
- Noosuk, P., Hill, S. E., Farhat, I. A., Mitchell, J. R., & Pradispasena, P. (2005). Relationship between viscoelastic properties and starch structure in rice from Thailand. *Starch* , 57 (12), 587-598.

- Ogale, A. A., Cunningham, P., Dawson, P. L., & Acton, J. C. (2000). Viscoelastic, thermal and microstructural characterization of soy protein isolate films. *Journal of Food Science* , 65, 672-679.
- O'Hair, S. K. (1990). Tropical root and tuber crops. *Horticultural Reviews* , 12, 157-166.
- Oh, S. Y., Yoo, D. I., Shin, Y., Kim, H. C., Kim, H. Y., Chung, Y. S., et al. (2005). Crystalline structure analysis of cellulose treated with sodium hydroxide and carbon dioxide by means of X-ray diffraction and FTIR spectroscopy. *Carbohydrate Research* , 340, 2376- 2391.
- Okaya, T., Kohno, H., Terada, K., Sato, T., Maruyama, H., & Yamauchi, J. (1992). Specific interaction of starch polyvinyl alcohols having long alkyl groups. *Journal of Applied Polymer Science* , 45, 1127-1134.
- Onwueme, I. C., & Alves, A. A. (2002). Cassava in Asia and Pacific & Cassava Botany and Physiology. In R. J. Hillocks (Ed.), *Cassava: Biology, Production and Utilization* (p. 55 & 67). Wallingford, Oxon, Great Britain: CABI Publishing.
- Pal, K., Banthia, A. K., & Majumdar, D. K. (2006). Preparation of transparent starch based hydrogel membrane with potential application as wound dressing. *Trends Biomaterial: Artificial Organs* , 20 (1), 59-67.
- Pal, K., Banthia, A. K., & Majumdar, D. K. (2008). Effect of heat treatment of starch on the properties of the starch hydrogels. *Materials Letters* , 62, 215-218.
- Parikh, D. V., Thibodeaux, D. P., & Condon, B. (2007). X-ray crystallinity of bleached and crosslinked cottons. *Textile Research Journal* , 77 (8), 612-616.
- Park, J.-S., Park, J.-W., & Ruckenstein, E. (2001). Thermal and dynamic mechanical analysis of PVA/MC blend hydrogels. *Polymer* , 42 (9), 4271-4280.
- Park, S., Baker, J. O., Himmel, M. E., Parilla, P. A., & Johnson, D. K. (2010). Cellulose crystallinity index: Measurement techniques and their impact on interpreting cellulose performance. *Biotechnology for Biofuels* , 3, 10.
- Parvin, F., Rahman, M. A., Islam, J. M., Khan, M. A., & Saadat, A. H. (2010). Preparation and characterization of starch/PVA blend for biodegradable packaging material. *Advance Materials Research* , 123-125.
- Patachia-Bodonea, S. (2003). Blends based on the Polyvinyl Alcohol and the products based on this polymer. In *Handbook of Polymer Blends and Composites* (pp. 288-365). England: Rapra Tehcnology Ltd.
- Pennisetum purpureum*. (2010). Retrieved 1 3, 2010, from Wikipedia: [http://en.wikipedia.org/w/index.php?title=Pennisetum\\_purpureum&printable=y](http://en.wikipedia.org/w/index.php?title=Pennisetum_purpureum&printable=y)

- Pennisetum purpureum* - *Factsheet*. (2010). Retrieved 1 25, 2011, from Tropical Forages:  
<http://www.tropicalforages.info/key/Forages/Media/Html/Pennisetumpurpureum.htm>
- Peroni, F. H., Rocha, T. S., & Franco, C. M. (2006). Some structural and physicochemical characteristics of tuber and root starches. *Food Science and Technology International* , 12 (6), 505-513.
- (1995). Part 2 Nonwood Fibers - Grass Fibers. In M.-S. I. Pfaffli, *Fiber Atlas - Identification of Papermaking Fibers* (Springer Series in Wood Science ed., pp. 269-273).
- Phattaraporn, T., Waranyou, S., Fazilah, A., & Thawien, W. (2010). Characteristics and properties of rice starch films reinforced with palm pressed fibers. *International Food Research Journal* , 17, 535-547.
- Pickard, J. E., Asaoka, M., & Blanshard, J. M. (1991). The physicochemical properties of cassava starch. *Tropical Science* , 31, 189-207.
- Prasad, S. V. (1989). Natural Fiber based Composites. In K. A. Pergamon (Ed.), *Concise Encyclopaedia of Composite Materials* (pp. 197-199). New York.
- Presley, J. R., & Hill, R. T. (1996). Peroxide bleaching of chemimechanical pulps, pulp bleaching: Principles and practice. In W. D. Carlton, & D. W. Reeve (Eds.), *The Technology of Mechanical Pulp Bleaching* (pp. 457-512, 868). Atlanta.
- Puncha-arnon, S., Pathipanawat, W., Puttanlek, C., Rungsardthong, V., & Uttapap, D. (2008). Effects of relative granule size and gelatinization temperature on paste and gel properties of starch blends. *Food Research International* , 41, 552-561.
- Rahman, W. A., Lee, T. S., Rahmat, A. R., & Samad, A. A. (2010). Thermal behaviour and interactions of casava starch filled with glycerol plasticized PVA blends. *Carbohydrate Polymers* , 81 (4), 805-810.
- Ramaraj, B. (2007). Crosslinked polyvinyl alcohol and starch composite films: Study of their physicomechanical, thermal properties and swelling studies. *Journal of Applied Polymer Science* , 103 (2), 1127-1132.
- Rao, K. M., Prasad, A. V., Ranga Babu, M. N., Rao, K. M., & Gupta, A. V. (2007). Tensile properties of elephant grass fiber reinforced polyester composites. *Journal Materials Science* , 42, 3266-3272.
- Ray, A. K., Das, S. K., & Mondal, S. (2004). Microstructural characterization of bamboo. *Journal of Materials Science* , 39, 1055-1060.
- Revol, J. F., Dietrich, A., & Goring, D. A. (1987). Effect of mercerization on the crystallite size and crystallinity index in cellulose from different sources. *Canadian Journal Chemistry* , 65, 1724-1725.

- Rice. (2011). Retrieved 1 3, 2011, from teacher jacob: <http://tx.english-ch.com/teacher/jacob/others/rice/>
- Roohani, M., Habibi, Y., Belgacem, N. M., Ebrahim, G., Karimi, A. N., & Dufresne, A. (2008). Cellulose whiskers reinforced polyvinyl alcohol copolymer nanocomposites. *European Polymer Journal* , 44, 2489-2498.
- Rosa, M. F., Chiou, B., Medeiros, E. S., Wood, D. F., Williams, T. G., Mattoso, L. H., et al. (2009). Effect of fiber treatments on tensile and thermal properties of starch/ethylene vinyl alcohol copolymers/coir biocomposites. *Bioresource Technology* , 100, 5196-5202.
- Rosa, M. F., Chiou, B., Medeiros, E. S., Wood, D. F., Mattoso, L. H., Orts, W. J., et al. (2009). Biodegradable composites based on starch/EVOH/glycerol blends and coconut fibers. *Journal of Applied Polymer Science* , 111, 612-618.
- Rosa, M. F., Medeiros, E. S., Malmonge, J. A., Gregorski, K. S., Wood, D. F., Mattoso, L. H., et al. (2010). Cellulose nanowhiskers from coconut husk fibers: Effect of preparation conditions on their thermal and morphological behaviour. *Carbohydrate Polymers* , 81 (1), 83-92.
- Rosenthal, F. R., Nakamura, T., Espindola, A. M., & Jochimek, M. R. (1974). Structure of starch granules. *Stärke* , 26, 50-55.
- Sago. (2011). Retrieved 1 4, 2011, from Craun Research: [http://www.craunresearch.com.my/HTML/Info%20On%20Sago/Info%20On%20Sago\\_%20Introduction.htm](http://www.craunresearch.com.my/HTML/Info%20On%20Sago/Info%20On%20Sago_%20Introduction.htm)
- Sarkanen, K. V., & Ludwig, C. H. (1971). *Lignins: Occurrence, Formation, Structure, and Reactions*. New York: Wiley Interscience.
- Salgado, P. R., Schmidt, V. C., Ortiza, S. E., Mauri, A. N., & Laurindo, J. B. (2008). Biodegradable foams based on cassava starch, sunflower proteins and cellulose fibers obtained by a baking process. *Journal of Food Engineering* , 85 (3), 435-443.
- Segal, L., Creely, J. J., Martin Jr., A. E., & Conrad, C. M. (1959). An empirical method for estimating the degree of crystallinity of native cellulose using the x-ray diffractometer. *Textile Research Journal* , 29, 786-794.
- Siddaramaiah, Raj, B., & Somashekar, R. (2004). Structure-property relation in polyvinyl alcohol/starch composites. *Journal of Applied Polymer Science* , 91, 630-635.
- Satin, M. (2011). *FAO Agricultural Food Engineering Technologies Service*. Retrieved 1 26, 2011, from Functional Properties of Starches: <http://www.fao.org/Ag/magazine/pdf/starches.pdf>
- Sato, T., Yamuchi, J., & Okaya, T. (1998). *Patent No. CA 108: 205283*. Europe.

- Schoch, T. J. (1942). Non-carbohydrate substances in the cereal starches. *Journal American Chemical Society* , 64 (12), 2954-2956.
- Scurlock, J. M., Dayton, D. C., & Hames, B. (2000). Bamboo: An overlooked biomass resource? *Biomass and Bioenergy* , 19, 229-244.
- Shipman, L. (1967). Manufacture of tapioca, arrowroot, and sago starches. In R. L. Whistler, & E. F. Paschall (Eds.), *Starch: Chemistry and Technology* (pp. 118-119). New York: Academic Press.
- Sie, R. S., Charles, G., Daillo, H. A., Kone, D., Toueix, Y., Dje, Y., et al. (2011). Breeding of hibiscus sabdariffa L.: Evaluation of resistance to *Fusarium oxysporum* Schlecht. Emend. Synd. and Hans in two varieties. *Agriculture and Biology Journal of North America* , 2 (1), 125-133.
- Singh, N., Kaur, L., Sandhu, K. S., Kaur, J., & Nishinari, K. (2006). Relationships between physicochemical, morphological, thermal, rheological properties of rice starches. *Food Hydrocolloids* , 20, 532-542.
- Singhal, R. S., Kennedy, J. K., Gopalakrishnan, S. M., Kaczmarek, A., Knill, C. J., & Akmar, P. F. (2008). Industrial production, processing, and utilization of sago palm derived products. *Carbohydrate Polymers* , 72, 1-20.
- Srichuwong, S., Sunarti, T. C., Mishima, T., Isono, N., & Hisamatsu, M. (2005). Starches from different botanical sources I: Contribution of amylopectin fine structure to thermal properties and enzyme digestibility. *Carbohydrate Polymers* , 60, 529-538.
- St-Pierre, N., Favis, B. D., Ramsay, B. A., Ramsay, J. A., & Verhoogt, H. (1997). Processing and characterization of thermoplastic starch/polyethylene blends. *Polymer* , 38, 647-655.
- Summerscales, J., Dissanayake, N. P., Virk, A. S., & Hall, W. (2010). A review of bast fibers and their composites. Part 1 - Fibers as reinforcements. *Composites , Part A* 41, 1329-1335.
- Sun, R. C., & Sun, X. F. (2002). Fractional and structural characterization of hemicelluloses isolated by alkaline and alkaline peroxide from barley straw. *Carbohydrate Polymers* , 49, 415-423.
- Swinkels, J. J. (1985). Sources of starch, its chemistry and physics. In G. M. VanBeynum, & J. A. Roels (Eds.), *Starch conversion technology* (pp. 15-45). New York: Marcel Dekker Inc.
- TAPPI (Technical Association of the Pulp and Paper Industry) T 259. (2009). *Pulp Properties* .
- Tester, R. F., Karkalas, J., & Qi, X. (2004). Starch - Composition, fine structure and architecture. *Journal of Cereal Science* , 39, 151-165.

- Tharanathan, R. N. (2003). Biodegradable films and composite coatings: Past, Present and Future. *Trends in Food Science and Technology* , 14, 71-78.
- Thomas, P. S., Guerbois, J. P., Russell, G. F., & Briscoe, B. J. (2001). FTIR study of the thermal degradation of PVA. *Journal of Thermal Analysis and Calorimetry* , 64, 501-508.
- Tomasi, G., Scandola, M., Briese, B. H., & Jendrosseck, D. (1996). Enzymatic degradation of bacterial poly(3-hydroxybutyrate) by a depolymerase from *Pseudomonas lemoignei*. *Macromolecules* , 29, 507-513.
- Tomczak, F., Sydenstricker, T. H., & Satyanarayana, K. G. (2007). Studies of lignocellulosic fibers of Brazil. Part II: Morphology and properties of Brazilian coconut fibers. *Composite Part A: Applied Science and Manufacturing* , 38, 1710.
- Tonukari, N. J. (2004). Cassava and the future of starch. *Electronic Journal of Biotechnology* , 7 (1), 5-8.
- Trotman, W. (1970). *Dyeing and Chemical Technology of Textile Fiber*. London: Hillman.
- Tsachiya, Y., & Sum, K. (1969). Thermal decomposition products of polyvinyl alcohol. *Journal Polymer Science Part A* , 1 (7), 3151-3158.
- Tubbs, R. K., & Ting, K. W. (1973). Thermal properties of Polyvinyl Alcohol. In C. A. Finch (Ed.), *Polyvinyl Alcohol - Developments* (pp. 167-182). Chichester: John Wiley.
- Tutus, A., & Usta, M. (2004). Bleaching of chemithermomechanical pulp (STMP) using environmentally friendly chemicals. *Journal of Environmental Biology* ,25, 141-145.
- Uhl, N. W. (1987). *Genera Palmarum: A Classifications of Palms based on the work of Harold E. Moore, Jr.* Allen Press.
- Van Dam, A. A., Chikafumbwa, F. J., Jamu, D. M., & Costa Pierce, B. A. (1993). Trophics Interactions in a Napier Grass (*pennisetum purpureum*) - fed aquaculture pond in Malawi. In V. Christensen, & D. Pauly (Eds.), *Trophics Models of Aquatic Ecosystems* (p. 66).
- Vandeputte, G. E., Vermeylan, R., Geeroms, J., & Delcour, J. A. (2003). Rice Starches. I. Structural aspects provide insight into crystallinity characteristics and gelatinization behaviour of granular starch. *Journal of Cereal Sciences* , 38, 43-52.

- van Soest, J. J., Tournois, H., de Wit, D., & Vliegenthart, J. F. (1995). Short-range structure in (partially) crystalline potato starch determined with attenuated total reflectance Fourier Transform IR spectroscopy. *Carbohydrate Research* , 279, 201-214.
- van Soest, J. J., Tournois, H., de Wit, D., & Vliegenthart, J. F. (1994). The influence of glycerol on the structural changes in waxy maize starch as studied by Fourier Transform Infrared Spectroscopy. *Polymer* , 35, 4721-4727.
- van Soest, J. J., Hulleman, S. H., de Wilt, D., & Vliegenthart, J. F. (1996). Crystallinity in starch bioplastics. *Industrial Crops and Products* , 5, 11-22.
- Ververis, C., Georghiou, K., Christodoulakis, N., Santas, P., & Santas, R. (2004). Fiber dimensions, lignin and cellulose content of various plant materials and their suitability for paper production. *Industrial Crops and Products* , 19, 245-254.
- Vilaseca, F., Mendez, J. A., Pelach, A., Llop, M., Canigual, N., Girones, J., et al. (2007). Composite materials derived from biodegradable starch polymer and jute strands. *Process Biochemistry* , 42, 329-334.
- Vroman, I., & Tighzert, L. (2009). Biodegradable Polymers. *Materials* , 2, 307-344.
- Wade, L. G. (1999). *Organic Chemistry*. New Jersey: Prentice Hall.
- Wang, S., Yu, J., & Jin, F. (2008). The new insight on the ultrastructure of C-type starch granules revealed by acid hydrolysis. *International Journal of Biological Macromolecules* , 43 (2), 216-220.
- Wang, W. J., Powell, A. D., & Oates, C. G. (1995). Pattern of enzyme hydrolysis in raw sago starch: Effects of processing history. *Carbohydrate Polymers* , 26, 91-97.
- Wang, Y., Chen, M., & Li, J. (2007). Rice. In E.-C. Pua, & M. R. Davey (Eds.), *Biotechnology in Agriculture and Forestry, Transgenic Crops IV* (Vol. 59, pp. 35-47). Springer.
- Watase, M., & Nishinari, K. (1989). Effect of the degree of saponification on the rheological and thermal properties of polyvinyl alcohol gels. *Makromol Chem.* , 190 (1), 155-163.
- Webber III, C. L., & Bledsoe, R. E. (2002). Kenaf yield components and plant composition. In J. Janick, & A. Whipkey (Eds.), *Trends in New Crops and New Uses* (pp. 348-357). Alexandria, VA: ASHS Press.
- Webber III, C. L., & Bledsoe, R. E. (1993). Kenaf: Production, Harvesting and Products. In J. Janick, & J. E. Simon (Eds.), *New Crops* (pp. 416-421). New York: Wiley.



- Webber III, C. L., & Bledsoe, V. K. (2002). Kenaf Production: Fiber, Feed and Seed. In J. Janick, & A. Whipkey (Eds.), *Trends in New Crops and New Uses* (pp. 327-339). Alexandria, VA: ASHS Press.
- Wielage, B., Lampke, T., Utschick, H., & Soergel, F. (2003). Processing of natural fiber reinforced polymers and the resulting dynamic mechanical properties. *Journal of Materials Processing Technology*, *139*, 140-146.
- Wina, E., Evan, A. J., & Lowry, J. B. (1986). THE composition of pith from the sago palms Metroxylon sagu and Arenga pinna. *Journal of the Science Food and Agriculture*, *37* (4), 352-358.
- Woodard, K. R., & Sollenberger, L. E. (2010). *Production of Biofuel Crops in Florida: Elephant Grass*. University of Florida IFAS Extension.
- Xanthos, M. (2000). *Functional Fillers for Plastics*.
- Xiao, B., Sun, X. F., & Sun, R. C. (2001). Chemical, structural and thermal characterizations of alkali soluble lignin, hemicelluloses, and cellulose from maize stems, rye straw and rice straw. *Polymer Degradation and Stability*, *74*, 307-319.
- Xiong, H., Tang, S., Tang, H., & Zhou, P. (2008). The structure and properties of a starch based biodegradable film. *Carbohydrate Polymers*, *71*, 263-268.
- X-ray Scattering Technique*. (2010). Retrieved 9 15, 2010, from Wikipedia: [http://en.wikipedia.org/wiki/x-ray\\_scattering\\_techniques](http://en.wikipedia.org/wiki/x-ray_scattering_techniques)
- Xu, Y. X., & Hanna, M. A. (2005). Preparation and properties of biodegradable foams from starch acetate and poly(tetramethylene adipate-co-terephthalate). *Carbohydrate Polymers*, *59*, 521-529.
- Yan, T., Xu, Y., & Yu, C. (2009). The isolation and characterization of lignin in kenaf fiber. *Journal of Applied Polymer Science*, *114*, 1896-1901.
- Yang, H., Gardner, D. J., & Kim, H. (2009). Viscoelastic and thermal analysis of lignocellulosic material filled polypropylene biocomposites. *Journal of Thermal Analysis and Calorimetry*, *98*, 553-558.
- Yang, H., Yan, R., Chen, H., Lee, D. H., & Zheng, C. (2007). Characteristics of hemicellulose, cellulose and lignin pyrolysis. *Fuel*, *86*, 1781-1788.
- Yang, S. Y., & Huang, C. Y. (2008). Plasma treatment for enhancing mechanical and thermal properties of biodegradable PVA/starch blends. *Journal of Applied Polymer Science*, *109*, 2452-2459.
- Yang, Z., Xu, S., Ma, X., & Wang, S. (2008). Characterization and acetylation behaviour of bamboo pulp. *Wood Science Technology*, *42* (8), 621-632.

- Yatsugi, T. (1986). Problems of sago starch manufacturing. *Proceeding of the 3rd International Sago Symposium*, (pp. 201-207). Tokyo, Japan.
- Yun, Y.-H., & Yoon, S.-D. (2009). Effect of amylose content of starches on physical properties and biodegradability of starch/PVA blended films. *Polymer Bulletin* , 64 (6), 553-568.
- Zamora, A. (2005). *Carbohydrates Chemical Structure*. Retrieved 12 15, 2010, from Scientific Psychic:  
<http://www.scientificpsychic.com/fitness/carbohydrates2.html>
- Zhao, W., Kloczkowski, A., & Mark, J. E. (1998). Novel high performance materials from starch. 3. Influence of degree of substitution and amylose/amylopectin ratio on performance. *Chem. Mater.* , 10, 804-811.
- Zobel, H. F. (1998). Molecules to granules - A comprehensive starch review. *Starch* , 40, 44-50.