

fibre. There are also some cross striations on the CF fibre surface which makes it conducive to be spun into yarn. The spinning property of CF fibre is similar to that of cotton, and it may be spun into yarn with the cotton spinning system.

How to optimise scouring technology so as to achieve a better spinnability property is to be researched further. Whether CF fibre possesses some other medical or health protection functions is also to be further verified.



References

- Chen Xiangping, Fang Jia, Li Qiaolan, et al. Research on Development of Mulberry Fiber and Its Textile [J]. *Journal of Silk* 2013; (12): 1-6.
- Sheng Zhanwu, Zheng Lili, Gao Jinhe, et al. Process optimization for bio-degumming of banana fiber and characteristics of degummed fibers [J]. *Transactions of the Chinese Society of Agricultural Engineering* 2014; (10): 277-284.
- Zhou Jianping, Yang Yuan. Testing and Analysis of Style of Bamboo fiber fabrics [J]. *Journal of Textile Research* 2012; (9): 47-49.
- Zhang Sumin, Yu Shurong, Zhou Xiaohong. Research on the Bromelia Fiber and Its Blended Fabrics [J]. *Modern Textile Technology* 2009; (6): 4-7.
- Jiang Shaojun, Zhang Juncheng, Wu Hongling, et al. Application of Pectinase in Hemp fiber Degumming [J]. *Textile Auxiliaries* 2007; (8): 40-42.
- Ma Lin, Sun Weiguo. The Research and Test on Properties of Degummed Apocynum Fiber [J]. *Textile Technology Progress* 2009; (5): 50-51, 57.
- Zhang Yixin, Zhu Jinzhong, Yuan Chuangang. *Textile Material* (Second Edition) [M], China Textile Press, July 2009: 49.
- Zhu Jinzhong, Mao Huixian, Li Yi, et al. *Textile Material Experiment* (Second Edition) [M], China Textile Press, July 2008: 39-60.
- Wei Xuemei, Liu Chengjin, Dong Chuanmin. *Introduction to Textile* (Second Edition) [M], Chemical Industry Press, August 2014: 5-8.
- Lu Jiangnan, He Deyi, Wang Chaoyun, et al. Investigation on the flax fiber production in China [J]. *Plant Fibers and Products* 2004; (2): 95-102.
- Zhou Yuping, Gao Huayuan, Liu Hailong. The development of hemp industry in Jilin province [J]. *Journal of Anhui Agricultural Science* 2012; (10): 5845-5847.
- Zhang Congyong, Li Xiangcai, Ke Meizhi. Report on the experiments of north seed flax planting in south [J]. *Hubei Agricultural Sciences* 2003; (3): 30-31.

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 - evaluation and improvement of technology used in domestic mills;
 - development of new research and analytical methods;
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- Working out and adapting analytical methods for testing the content of pollutants and trace concentrations of toxic compounds in waste water, gaseous emissions, solid waste and products of the paper-making industry,
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- Organic sulphur compounds (AOS, TS)
- Resin and chlororesin acids
- Saturated and unsaturated fatty acids
- Phenol and phenolic compounds (guaiacols, catechols, vanillin, veratrols)
- Tetrachlorophenol, Pentachlorophenol (PCP)
- Hexachlorocyclohexane (lindane)
- Aromatic and polyaromatic hydrocarbons
- Benzene, Hexachlorobenzene
- Phthalates
- Carbohydrates
- Glycols
- Polychloro-Biphenyls (PCB)
- Glyoxal
- Tin organic compounds

Contact:

INSTITUTE OF BIOPOLYMERS AND CHEMICAL FIBRES
ul. M. Skłodowskiej-Curie 19/27, 90-570 Łódź, Poland
Michał Janiga, M.Sc., Eng.
m.janiga@ibwch.lodz.pl icpnls@ibwch.lodz.pl