Modification of Sodium Lignosulfonate Acid Using Polyethers into Surfactants

Chunxiang Li[1], Jessica See[1], Yongjia LI[2], Xijiang YIN[1], Weng Kee LEONG[3]

[1]Advanced Materials Technology Centre, Singapore Polytechnic, Singapore
[2]Department of Chemical Science & Technology, Kunming University
[3]School of Physical and Mathematical Sciences, Nanyang Technological University

LICX@sp.edu.sg

Lignin is the substance that makes trees and plants sturdy and it accounts for about 30% of the organic carbon on Earth. When wood is being processed into paper, lignin is produced as waste which is usually burnt even though it is a low-grade fuel. Other uses include sodium lignosulfonate, which can be used as a surfactant. However, it is not widely used as its surface activity is not as good as that of synthetic, commercially available surfactants. Hence, this project aims to modify sodium lignosulfonate into a surfactant with better surfactant properties. This is done by reaction with sodium lignosulfonate with polyethers and epichlorohydrin. One of the better end products (1% wt) gave a surface tension of 41 mN m^{-1} and a CMC of 0.15 g L^{-1}. This is lower than the CMC and the surface tension (45 mN m^{-1}) of the surfactant sodium lignosulfonate.

Acknowledgements The financial support of Ministry of Education (MOE), Singapore