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UniKL Author	:	Harun Sarip; Amin Safwan Alikasturi
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Abstract	:	Cellulose, highly abundant biopolymer biomass, offers a sustainable alternative to fossil fuels. The conversion of cellulose to value-added chemicals occurs by breaking the cellulose β-1,4-glycosidic bonds via hydrolysis. Levulinic acid (LA), a very versatile building block that can be used as a precursor in polymers, resins, medicines, oxygenated fuel additives, and liquid biofuels, can be produced from cellulose. During acid hydrolysis, reaction temperature and substrate loading are frequently highlighted as important factors in the production of LA. As a result, this research aims to investigate both of these factors, especially the yield of LA. The reaction temperature and substrate loading were varied from 110-170 °C and 0.6-1.2 g respectively. The catalyst was synthesized using wet impregnation method to incorporate 20 wt.% SO₂-on silica-alumina (SiO₂-Al₂O₃) and further characterized using Fourier Transforms Infrared Spectroscopy (FTIR). The catalytic reaction was carried out in a batch reactor. According to the results obtained, it can be highlighted that the reaction temperature of 170 °C and 0.8 g of cellulose loading at a reaction time of 2 hrs were ideal for the reaction. The yield of LA was as high as 65.6%.