Regression models on the age-affecting and microfibril angle of Acacia mangium

Abstract

Diffraction patterns arising from crystal planes of various sample forms of wood trees had attracted scientific research in determining the crystallographic measurements. As such the tropical hard wood in Sabah, *Acacia mangium* was chosen for experimental data. Age-contributing factors were measured; the angle of reflection (θ), relative intensity, full width at half maximum (FWHM), the nearest between two neighbouring atoms in the crystalline structure (d-spacing) and the peak height, had been taken into account at different ages, pith and bark of tree. Regressions were done in comparing the microfibril angle, MFA at different ages using the least-square method and cubic-spline interpolation. The latter was able to interpolate a polynomial up to the third order. The range of the optimum angle was found to have benefited foresters in deciding the time for tree cropping and harvesting.