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INVESTIGATION OF ARABIC GUM OPTICAL PROPERTIES AS UV-BLUE LIGHT DOWN CONVERSION FOR LIGHT EMITTING DIODE APPLICATION

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ABSTRACT- LED's as energy-efficient lighting is the best way to reduce the cost besides give good brightness. The use of Arabic gum as a remote phosphor for light down conversion. In this study, two experiments were conducted using Gum Arabic Malaysia and Gum Arabic Sudan in different annealing temperature (150°C and 200°C) and different time 20, 40, 60, 80 and 100 minutes and using different mass, 100mg and 150mg. The gum power encapsulated in 0.7ml silicone gel and dried to do remote phosphor using for light conversion. The Gum Arabic from Sudan and Malaysia were measured using HPC-2 light source colorimeter. The measured result show that the gum Arabic has high value in rendering index, CRI if the gum annealed at longer time and at the optimal temperature. The CCT value that show the best result or positive values are below 2500. The gum Arabic with melting process also show improvement in result. The mass of the powder used give high concentration thus the CRI value is nearest to the 80 as references value.

Keywords: LED, laser, gum, CCT, CRI, colorimeter.