Green Emitters for White Light Emitting Diodes: A Comparative Study

Arumugam Manohar*1, Tesfamichael Haile1, Aron Hailemichael1, Haben Haile Hapte1, Muniasamy Kottaisamy2 and Kottaimalai Karpagavel3

1Department of Chemistry, College of Science, Eritrea Institute of Technology, Mai-Nefhi, P.O.Box 12676, Eritrea, N. E. Africa
2Department of Chemistry, Thiagarajar College of Engineering, Madurai, India
3Department of Chemistry, Ramco Institute of Technology, Rajapalayam, India

Abstract: In the present study, a comparative analysis was carried out on the luminescent properties of metaloquinolates of Zinc, Cadmium, Aluminium and the complexes have been used for the testing of white light emission in order to apply in phosphor converted White Light Emitting Diodes (pcLEDs). Initially, the resulting metaloquinolates were characterized by using Infrared, UV-Visible spectra, Thermogravimetry, Photoluminescence, and CIE Chromaticity Coordinates. The white light emission was realized by mixing each metaloquinolate with a red and blue emitters respectively. The results show that the complex, bis(8-hydroxyquinolinato)zinc(II), Znq2, can be used as excellent luminescent green emitter for phosphor converted white LEDs (pcLEDs), realizing better white light emission than the other two metaloquinolates.

Key words: Metaloquinolate, Photoluminescence, White light emission, Green emitters, CIE Chromaticity.


DOI= http://dx.doi.org/10.20902/IJCTR.2019.120124

*****