

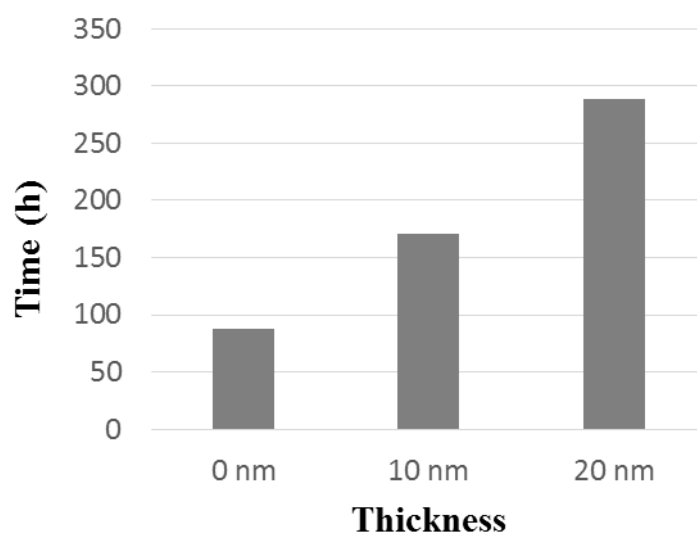
## Effective Way of Increasing the Lifetime of Blue Phosphorescent Organic Light Emitting Diodes Using a Buffer Layer.

Sang Kyu Jeon<sup>1</sup>, Jun Yeob Lee<sup>1</sup>

<sup>1</sup>School of Chemical Engineering, Sungkyunkwan University, 2066, Seobu-ro, Jangan-gu, Suwon-si, Gyeonggi-do, 440-746, Republic of Korea

Tel.:82-031-299-4716, E-mail: [leej17@skku.edu](mailto:leej17@skku.edu)

We devised blue devices incorporating a buffer layer in order to improve the lifetime of the blue phosphorescent organic light emitting diodes effectively. 3,3-Di(9H-carbazol-9-yl)biphenyl was used as a buffer layer and as a host material simulatnesously for a blue phosphorescent dopant. The blue devices were fabricated using a buffer layer with a thickness of 0-20 nm and the life-time was measured. We found that the lifetime of the blue phosphorescent OLED devices was improved by inserting a buffer layer. The increase of the buffer layer thickness increased the lifetime of the devices. The lifetime of the 20 nm thick buffer layer introduced device was more than three times as long as that of the buffer layer free device.



**Fig. 1. Lifetime of the blue device according to the thickness of the buffer layer**

### Acknowledgment

### References

1. P. E. Burrows, V. Bulovic, S. R. Forrest, L. S. Sapochak, D. M. McCarty and M. E. Thompson., *Applied Physics Letters* 65, 2922 (1994).
2. G.Y. Zhong, Y.Q. Zhang, X.A. Cao, *Organic Electronics* 11, 1338 (2010).
3. K.S. Yook, J.Y Lee, *Journal of Industrial and Engineering Chemistry* 16, 181 (2010).