**Improving quality of Co/Alq3 interface using a diffusion barrier: X-ray reflectivity study**

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Quality of interface of ferromagnetic & organic semiconductor bilayer thin film is very crucial due to its huge importance in the performance of organic spintronic devices. A significant amount of research efforts has been going on to reduce the diffusion of ferromagnetic material into organic semiconductors In this study we have investigated and tried to improve Co/Alq3 interface quality. We have studied two samples with layer structure Co/Alq3/Si and Co/TiO2/Alq3/Si. We have introduced a very thin layer of TiO2 in between Co layer and Alq3 layer to investigate the effect of diffusion barrier on reduction of diffusion of Co into Alq3,. X-ray reflectivity (XRR) measurements were performed from both the samples to determine internal structural along surface normal direction. XRR analysis reveals that diffusion of Co into Alq3 reduces significantly in the presence of TiO2 diffusion barrier layer, in-turn improves the interface quality which is very much required for better performance of organic spin valve devices.