Development of Flexible Displays

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Samsung Advanced Institute of Technology (SAIT) has a role of central research center for whole Samsung groups. We develop mid and long term technologies for materials & devices. At this conference, I will explain one of our research activities; development of active flexible display. To realize flexible displays, we will have to develop flexible driving devices (TFT), flexible display devices, encapsulation technologies and so on. In this talk, I will explain some our research activities for printable organic light emitting display(OLED), quantum dot OLED and organic TFT (OTFT).

For printable OLED, we develop polymeric light emitting materials and quantum dot of CdS, CdSe for printable displays. Key issues of these materials and devices are life time, light emitting efficiency and color purity. Development of printable blue light emitting materials and devices is the most important key issue to realize flexible OLED. To obtain high performance blue light emitting materials and devices, it is important to get a balance of holes and electrons by designing molecular and device structures. With quantum dot, we could develop comparably good LED with substantially high efficiency and good color quality by controlling size and shape of nanoparticles and device structures.