

## Polyimide Based Nanohybrids; Characterization and Electro-optic Applications

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Aromatic polyimides (PIs) are representative high-performance materials because of their excellent thermal stability and mechanical strength due to the rigid phenyl and imide moieties of their backbones in addition to good electrical properties, light weight, and flexibility. Sometimes, however, further property enhancement is necessary by hybridizing polyimides with inorganic materials such as silica or silsesquioxane like materials in order to overcome the inherent weak points of organic materials. Therefore, we have carried out a series of works on polyimides and their hybrid materials for years.

In this presentation, I wish to introduce our recent works on the microstructure and interfacial interaction of PI based hybrid nanocomposites. A series of PI-silica and PI-polysilsesquioxane hybrid nanocomposites were prepared via sol-gel reaction and thermal imidization. On the other hand, since electroluminescent (EL) phenomenon in organic materials was discovered, there have been extensive research efforts on organic light emitting devices (OLEDs) to apply for the flat panel display. Thus we also extended the polyimide hybrid concepts to OLEDs in order to enhance thermal stability and thus long-term lifetime property of the OLEDs. PIs and hybrid materials for microelectronic applications and OLED will be further discussed. Finally, I will touch on the transparent flexible substrate based on PI based nanohybrids.

### References

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