

Supporting information

Flexible insulator of hollow SiO₂ spheres and polyimide hybrid for flexible OLED

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Figure S1 Shows the effect of variation of the hollow SiO₂ spheres and PI ratio was observed by changing PS beads solution concentration and O₂ RIE treatment. In the experiment, PS beads solutions with 0.21, 0.6, 0.75 and 0.75wt% (O₂ RIE treated substrate) were spin coated at 2000rpm and volume fraction of each samples are 0.13, 0.23, 0.32 and 0.42 respectively.

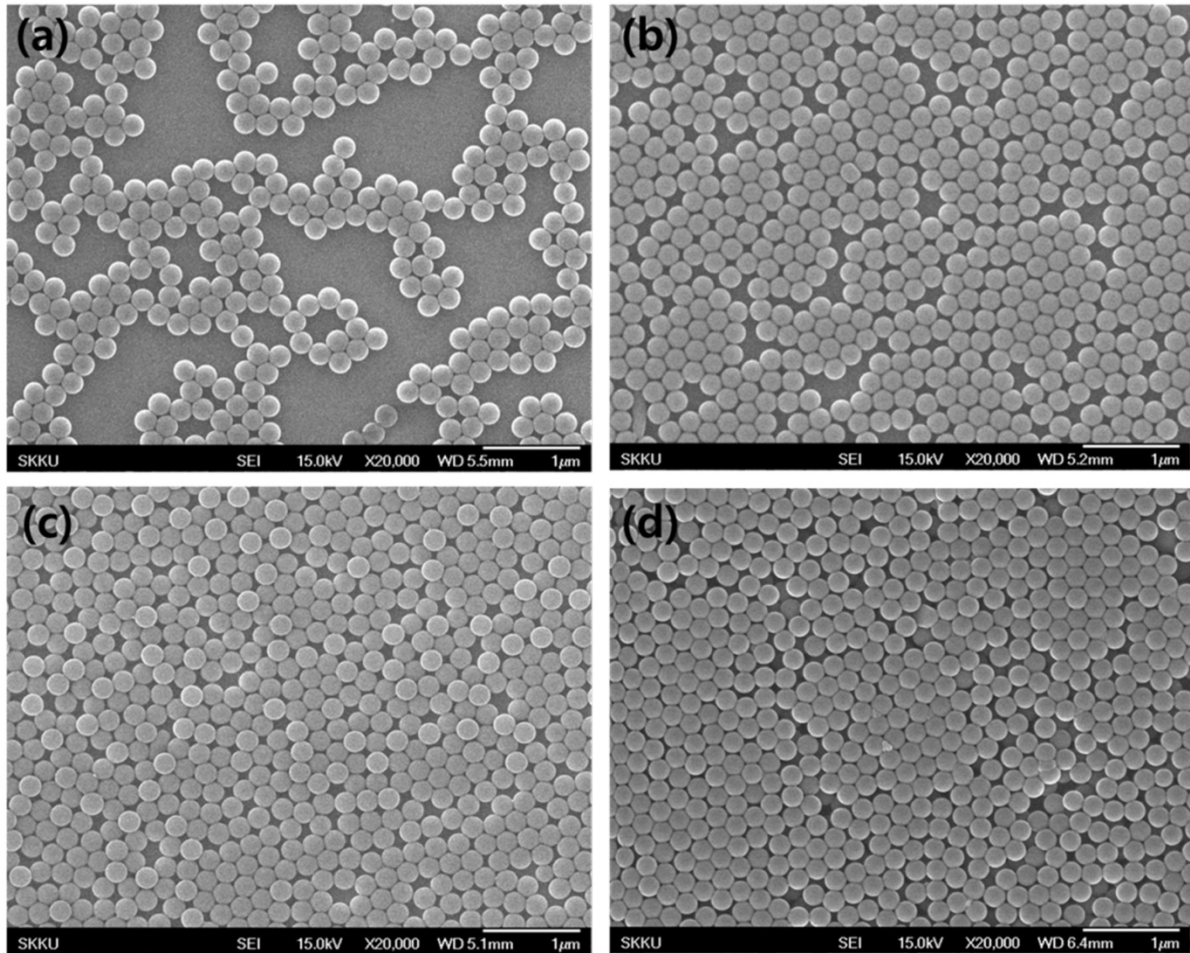


Figure S1. (a) SEM image of PS beads with 0.21wt% PS solution. (b) SEM image of PS beads with 0.6wt% PS solution. (c) SEM image of PS beads with 0.75wt% PS solution. (d) SEM image of PS beads with 0.75wt% PS solution on O₂ RIE treated substrate.

Figure S2 shows relation between the volume fraction of hollow SiO₂ spheres and dielectric constant of hybrid film. The volume fractions of hollow SiO₂ spheres are 0.13, 0.23 and 0.32 have the values of dielectric constant which are 3.18, 2.68 and 1.98 respectively. The hollow SiO₂ spheres and polyimide hybrid film having 0.42 volume fraction was collapsed by tiny external force. PS beads stacked 2 layers after spin coating on O₂ RIE treated substrate and SiO₂ cannot cover bottom of PS beads during ALD process.

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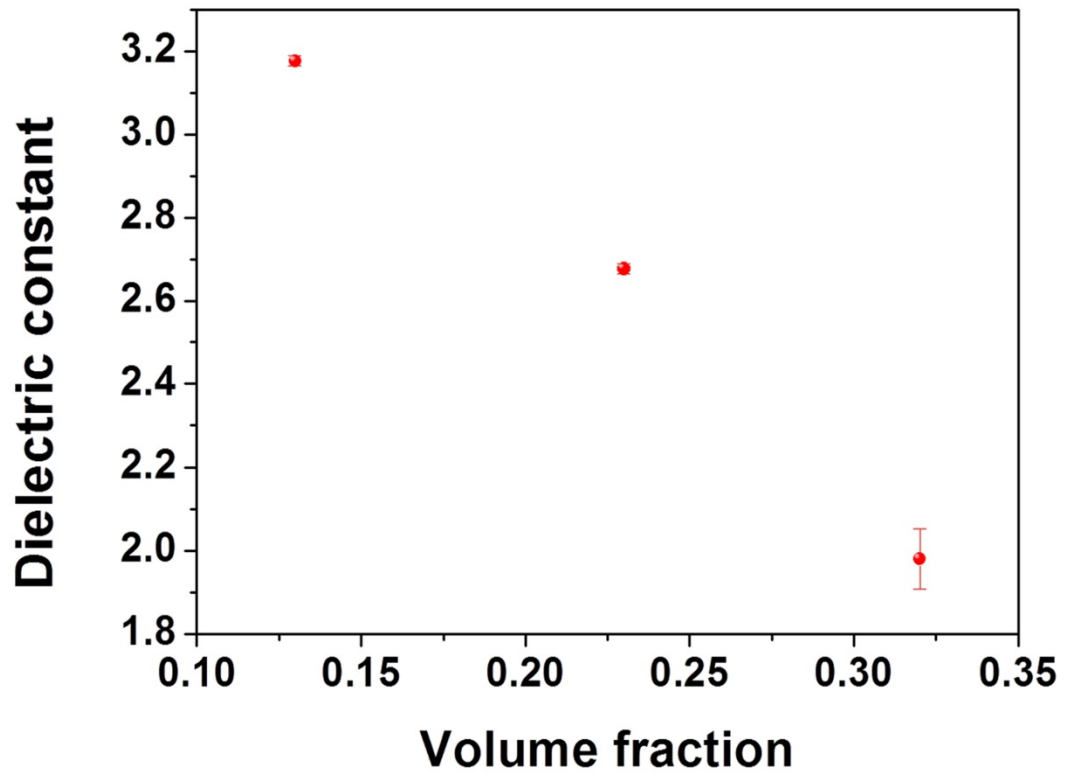


Figure S2. The volume fraction of hollow SiO₂ spheres versus dielectric constant of hybrid film.