

Flexible Organic Electronic Devices enabled by Vapor-Phase Deposition of Polymeric Insulators and Organic Semiconductors

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This talk will describe advances recently made for vapor-phase methods that enable (i) formation of flexible gate dielectric layers key to the success of low-voltage, highly flexible electronics; and (ii) mask-free formation of organic semiconductors for large-area functional systems. For the former, polymeric layers based on initiated chemical vapor deposition (iCVD) are explored as soft gate dielectric layers that exhibits excellent down-scalability, compatibility with various emerging semiconductor materials and substrates.¹ Low voltage flexible transistors and other devices such as non-volatile memory are presented as an example where the proposed polymer dielectric layers can play a crucial role. For the latter, organic vapor-jet printing (OVJP) method is presented as a solvent- and mask-free deposition tool for thin-film, small-molecular organic semiconductors. Flexible sensor arrays made by the OVJP method are demonstrated as an example where the OVJP can become highly useful.

Reference

[1] H. Moon, H. Seong, W.C. Shin, W.T. Park, M. Kim, S. Lee, J.H. Bong, Y.Y. Noh, B. J. Cho, S. Yoo, S. G. Im, *Nature Mater.* **2015**, *14*, 628