

## Condensable InP Quantum Dot Solids

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InP quantum dots capped by myristic acid (InP-MA QDs) were synthesized by a typical hot injection method using MA as stabilizing agent. The current density across the InP-MA QDs thin film which was fabricated by spin-coating method is about  $10^{-4}$  A/cm<sup>2</sup> at the electric field of 0.1 MV/cm from I-V measurement on a metal-insulator-metal (MIM) device. The low conductivity of the InP-MA QDs thin film is interpreted as due to the long interdistances among the dots governed by the MA molecules. Therefore, replacing the MA with thioacetic acid (TAA) by biphasic ligand exchange was conducted in order to obtain TAA capped InP QDs (InP-TAA). InP-TAA QDs were designed due to: 1) the TAA is very short molecule; 2) the thiolate groups on the surface of the InP-TAA QDs are expected to undergo condensation reaction upon thermal annealing which connects the QDs within the QD thin film through a very short linker -S-; and 3) TAA provides better passivation to the QDs both in the solution and thin film states which minimizing the effect of surface trapping states.

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