

0D/1D/2D/3D III-V materials grown by MBE for Optoelectronics

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In KIST, 8 (+1) MBE systems are installed for the study of low dimensional structures. With the MBEs, we are in the middle of studying; As/P/Sb-based materials with new properties, High speed III-V 2DEGs/2DHG for physics (mesoscopic physics, Topo. Insul. etc), high speed ($> \sim 20,000 \text{ cm}^2/\text{Vs}$), and low power consumption electronics (0.3 V operation), Digital-alloyed 2D structures for 7-10um QCL, QWIP, 0.8-1.6um LD, PDs, Catalyst free/Au-assisted GaAs/InAs/InP/InSb nano-rod 1D structures for Anyon operation or Nano TR etc., Various kind of semi-conductor QDs grown by SK, MEE, and Droplet methods for 1.3um QD laser, QDIP, single photon source of quantum computation/communications.

Scientists have pioneered the first stages of Si electronics, and now a new frontier in semiconductor electronics is arising. We will introduce contemporary issues associated with breaking new ground in the post-Si-era for semiconductors and discuss the research activities in the recently launched Post-Silicon Semiconductor Institute at KIST.

In this presentation, I will show MBE systems & activities with them in KIST and discuss probable co-works.