

technical bulletin

Routine Mobilities of 150,000+ in InP Achieved with SAFC Hitech TMI

A portion of SAFC Hitech’s quality program objectives is to re-validate the long standing quality of our metalorganic precursors. We pride ourselves on achieving batch-to-batch consistency with all of our sources. The studies enable us to correlate in-house analysis with material characterization and ensure that our processes are operating within the upper and lower control limits as set forth by our SPC/SQC systems.

Listed below are typical InP mobilities and carrier concentrations, provided by IQE, for various TMI delivery systems. These results are particularly important in the growth of detectors where the mobility of the intrinsic active InP layer is a principal factor in the performance of the device.

Solid or Solution	Layer Grown	Carrier Conc. by Hall at RT	Mobility by Hall at RT	Carrier Conc. by Hall at 77K	Mobility by Hall at 77K
Solid	10 μm InP	1.0 E14	4180	1.4 E14	166,000
Solution	6 μm InP	4.5 E13	4440	1.09 E14	210,000
Solid	6 μm InP	2.2 E13	4550	5.0 E13	196,600
Solution	6 μm InP	1.7 E13	4800	5.1 E13	151,000
Solution	6 μm InP	3.2 E13	5410	5.5 E13	232,000

The growth conditions for the above InP layers are:

V:III Ratio..... 450:1
 Substrate Temperature..... 650° C
 Growth Rate..... 7 Å/s
 Substrate..... Semi Insulating InP