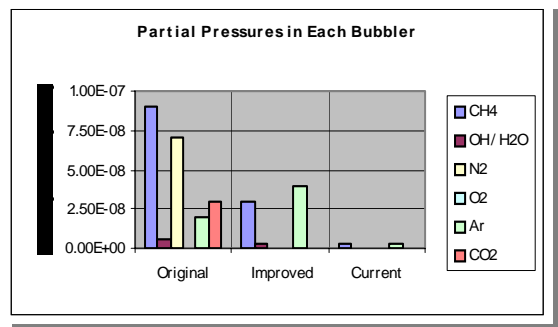
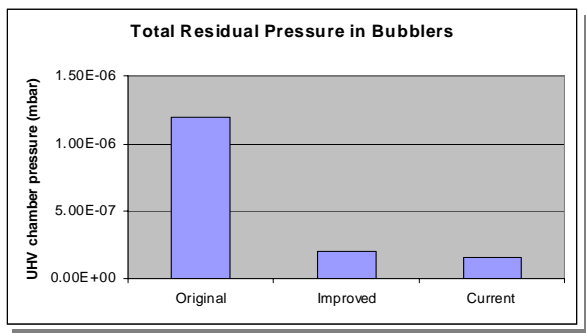


# technical bulletin

## Bubbler Preparation- Key Ingredient to High Performance Product

The production of ultra-high-purity precursors involves rigorous exclusion of impurities, which is also applicable to the bubblers employed as containers for supply of final product. These containers are fabricated from stainless steel under controlled conditions. To ensure that contamination does not occur, strict preparation techniques are employed before any metal alkyl is introduced. The major species of concern are water and oxygen absorbed to the interior surfaces and a number of rigorous stages are employed to remove these compounds. To test the efficiency of the removal, SAFC Hitech have commissioned tests using ultra-high vacuum residual gas analysis by mass spectrometry. The results indicate that a steady increase in the quality of the preparation process has been achieved in the last year, with water and oxygen levels reduced by almost 2 orders of magnitude.



In separate trials, the effect on the performance of EpiPure™ TMA has been assessed by placing identical product into differently prepared bubblers and performing AlGaAs growth trials across a range of parameters. The results of SIMS analysis for oxygen clearly indicate an order of magnitude reduction in oxygen incorporation levels could be achieved using the improved method of bubbler preparation for all III-V temperature and growth rate conditions investigated.

SAFC Hitech's new improved bubbler preparation methods, including surface treatment of the internal surface, minimises the risk of source contamination. Our new bubbler preparation together with our EpiPure™ Grade of metalorganics is evidence of SAFC Hitech's commitment to continuous improvement as we strive to provide the ultimate in precursor quality to our customers.