SAFC Hitech™ Enabling Technology

technical bulletin

EpiSensor™ Applications Widen

The patented EpiSensor™ continuous level indication system originally demonstrated for Trimethylgallium (TMG) and Trimethylaluminium (TMA) has been extended to cover an increased range of products from SAFC Hitech's portfolio. Based on capacitance, the EpiSensor™ level measurement sensitivity is related to the dielectric constant of the product. Literature values for this parameter are not readily available for the majority of compounds used in MOVPE, due to their hazardous nature, hence each product must be tested individually. Trials have now been performed to assess performance with Zn dopants and also a number of nitride precursors. In the trial, rapid removal of liquid was performed by pressure transfer in 10-20g aliquots followed by stabilisation periods and the response of the EpiSensor™ recorded. The data obtained clearly shows the stepwise reduction in product level expected and highlights the compatibility of each compound with the measurement system as illustrated below.

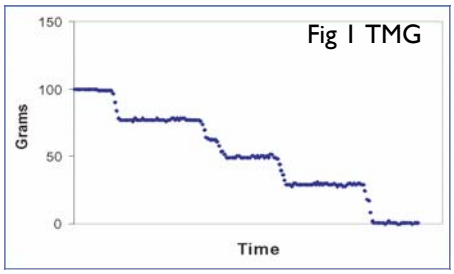

Fig 1 TMG

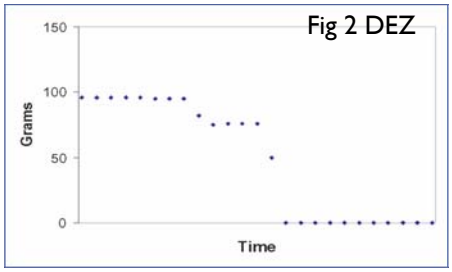

Fig 2 DEZ

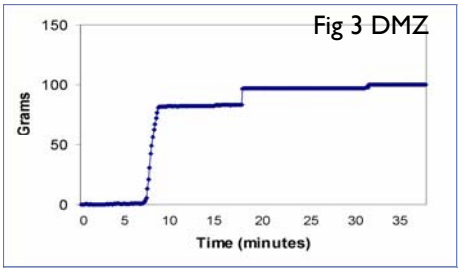

Fig 3 DMZ

The full range of products tested successfully to date is listed below, however ongoing research effort is underway to assess all of our liquid products. If a specific compound of interest is not listed, please contact your local representative for an update.

- Trimethlygallium (TMG)
- Trimethylaluminium (TMA)
- Dimethylzinc (DMZ)
- Diethylzinc (DEZ)
- Triethylgallium (TEG)
- Trimethylantimony (TMSb)
- Tetrakis(dimethylamino) titanium (TDMAT)
- Tetrakis(ethylmethylamido) hafnium (TEMAH)

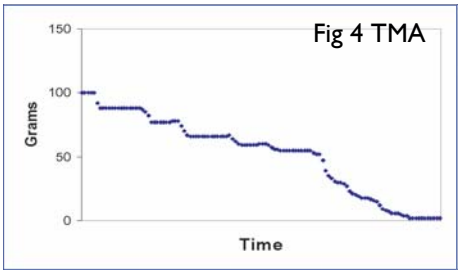

Fig 4 TMA