

Coating Thermal Noise Workshop – Wed Day 2 – Outcomes – GWADW 2016

G1601203

- High Index Vs. Low Loss
 - Add Ti for higher index
 - Prefer both
 - Absorption measurements needed for higher Ti concentrations
- aSi absorption
 - Dangling bonds, free carrier absorption
 - Free carrier density produces a limit to absorption?
 - Hydrogen dope samples - known to reduce absorption, shift in bandgap to change absorption edge
 - Wavelength dependence to absorption?
- High T and Rate Deposition
 - Stick to IBS – with studies from other deposition techniques
 - High T will lower loss most, but lower dep rate is easier (quicker) to implement
 - Deposition rate change limited by stable Ion sources - LMA
 - Difficult to change more than 10%
 - Possible to change (add more) Ion gun sources
 - UWS Ion gun source can be purchased for larger commercial vendor (more experimental)
 - High T – heating times, quench times?? Needs experiments, high dep T should produce better mech loss than post-dep annealed (F. Hellman, Berkeley)
 - Still need to think about absorption
- Other deposition parameters
 - Mixed approach to coating deposition – ion assisted dep, dep rate, dep T (at UWS)
 - Change ion source?
 - LMA – time required for change depends on magnitude of change
- Comparison of Loss techniques
 - Mech loss – need to be clear on freq measured
 - Standard sample set for all measurements
- Scatter loss spec
 - Standard technique?

- Theory vs. Experiment in modelling, Theory of deposition
 - Work together more closely going forward
 - Visit experiments –
 - Theory – try different combinations (possibly cryst temp?)
 - Difficult for Florida techniques at the moment – possible to work on
 - Model deposition – Florida – is possible, priority outcome from meeting