

## LTQ Orbitrap Classic, Discovery, and XL (ver 1.0)

### Key considerations:

- 1) **All calibrations** must be performed under stable spray conditions! Calibrate using ESI or HESI probe (NOT NANOSPRAY!!!) → ensure <15% RSD for >100scans
  - a. Under diagnostics, select Tests → system evaluation → check “API stability evaluation” → start test
- 2) **Use fresh calibration mix** for all calibrations
  - a. Pierce PN 88322  
– LTQ positive mode
  - b. Pierce PN 88324  
– negative mode
- 3) **Tune** using the source you will use for your LC-MS experiments (NSI). Tune parameters are tune file specific (use a relevant sample!)

### Core calibration and tuning schedule:

**Weekly:** “Invest ~ 1 hour with calmix each week, it pays off!”

- 1) Check **multiplier gain** calibration (positive mode) – if they fail, calibrate.
  - o *The multipliers are the heart of the instrument, keep them in good condition!*
  - o Check multipliers (pos and neg) every 3-5 days for new instruments (while multipliers are burning in)
- 2) Perform **FT mass** calibration.

### Monthly:

- 1) Check **multiplier gain** calibration (both positive and negative), if they fail, calibrate.
- 2) Check **isolation waveforms** and **activation waveform**.
- 3) Perform **FT mass** calibration.
- 4) Tune.

### Following vent/clean or if sensitivity drop is suspected:

- 1) Perform **all LTQ** calibrations.
- 2) Perform **FT mass** calibration.
- 3) Check all other Orbitrap calibrations. Recalibrate only if a procedure fails.
- 4) Tune.

