Micro Sensor
Background Measurement Frequency
“Calibration”

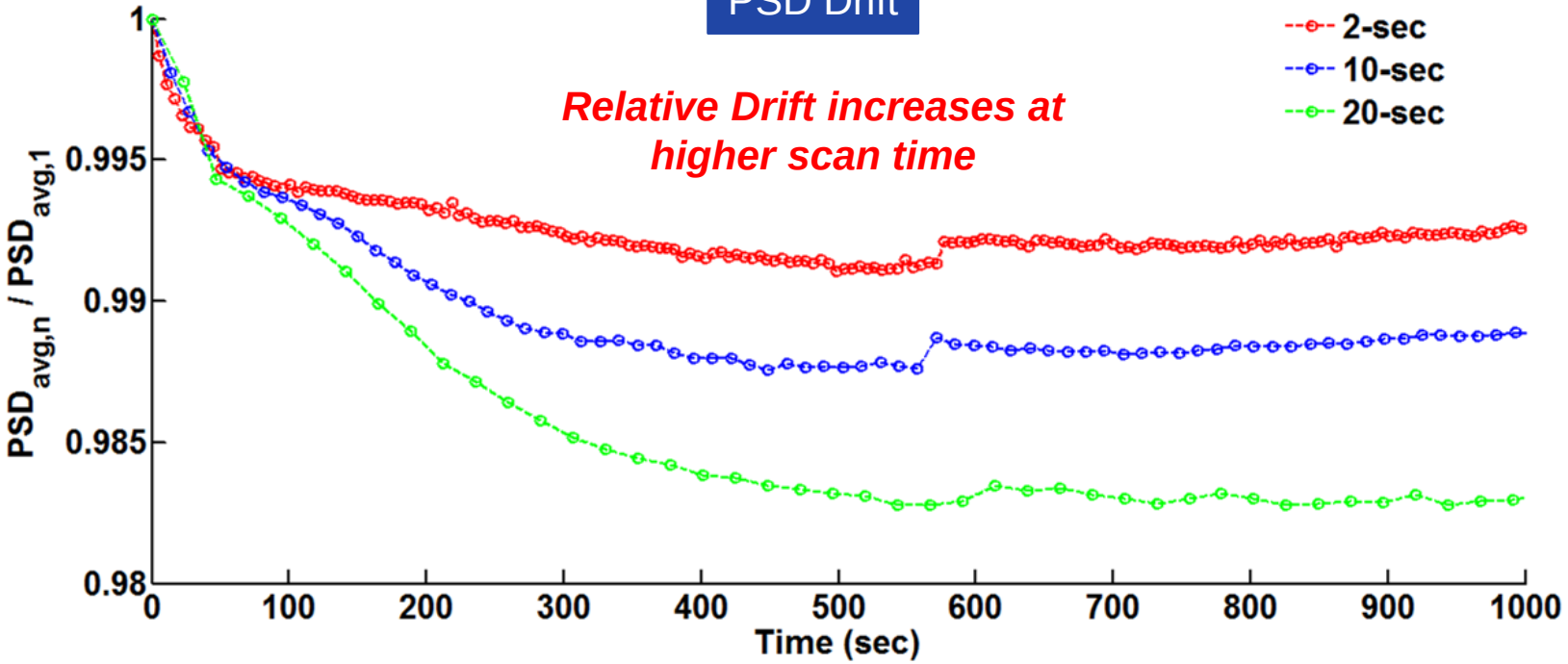
neospectra
Si-WARE SYSTEMS

Background Measurement Need

- **Absorbance is measured by ratioing Sample PSD to Background PSD, so the instrument spectral response is compensated**
- **Frequent measurement of background is recommended to avoid effect of instrument response drift**
- **Scanner response drift**
  - **Self-Heating (Warm-up) Effect**
    - No environmental changes (Ambient Temperature, Humidity, ...), variations will come from self heating/warm-up of the scanner (Sensor + Other electronics in scanner)
    - It depends on light source usage frequency and electronics operation inside the scanner (always on or off)
  - **Environmental Changes (Ambient Temperature, Humidity)**
    - Self-correction (internal sensor calibration) should be applied and new background is needed
    - Highly unlikely in case of a salon with controled temperature
  - Can be solved using some DSP in chemometrics (SNV or baseline correction algorithms)

Self-Heating (Warm-up) Effect Overview
Example in Certain Conditions

PSD Drift



- Continuous measurements
- Ratioing measurements to first measurement
- Baseline correction (SNV simplest) can solve this issue

Proposed Experiments

Characterization of self-heating

- Characterization of baseline drifts considering frequency of usage (how many scans per hour ? Separation between measurements ?)
- Decide on: start-up initialization time needed

Effect of self-heating on prediction error

- Multiple measurements of a standard hair sample during self-heating period
- Multiple measurements of a standard hair sample across a day with different time separation between measurements
- Decide if we need for
  - Start-up time initialization time needed
  - Working on baseline correction algorithm

Thank you

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