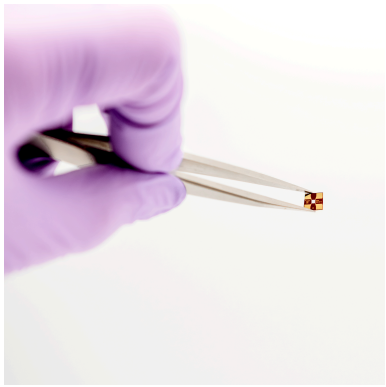
EMILIE™ · CONSUMABLE

EMILIE Validation Chip

A reference chip pre-loaded with a known amount of polystyrene, used to verify that an EMILIE™ system is performing to specification.



SAMPLE	SAMPLE LOAD	24 H DRIFT	RSD
Polystyrene nanobeads	10 ng	0.66–1.84 %	1.73–7.01 %

FEATURES

- Pre-loaded with 10 ng of polystyrene nanoplastic beads for a repeatable, known target.
- Verifies system performance across characteristic polystyrene bands.
- Runs with dedicated validation pre-settings; the result is compared against reference values.
- Built on the same 50 nm silicon-nitride chip platform as the sampling chip.

TABLE 2 SPECIFICATIONS

Pre-loaded analyte	10 ng polystyrene nanoplastic beads
Verification band (primary)	1601.25 cm^{-1}
Reference conditions	Bruker Invenio X, dry-air purge, SiN-normalized
Chip platform	50 nm SiN

TABLE 1 KEY NEMS-FT-IR PARAMETERS OBTAINED WITH EMILIE VALIDATION CHIP[1]

Polystyrene peak	1453 cm^{-1}	1601 cm^{-1}	3026 cm^{-1}	3082 cm^{-1}
24 h drift	1.73 %	1.28 %	1.84 %	0.66 %
Relative standard deviation (RSD)	3.78 %	7.01 %	1.73 %	5.03 %

[1] Measured in conjunction with a Bruker Invenio X, dry-air purging. Peak intensities normalized to SiN.

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This quick validation guide provides a brief procedure to validate EMILIE™ after installation or changes to the setup. For detailed instructions on operating EMILIE™ and its advanced features, refer to Section 5 of the user manual. For each measurement in this validation, make sure the optical alignment is done before recording a spectrum.

PROCEDURE

1. Record a background NEMS-FT-IR spectrum of the light source with an EMILIE™ **LIGHT** chip.
2. Record a NEMS-FT-IR spectrum of the EMILIE™ **VALIDATION** chip.
3. In OPUS, use the **EMILIE-Validation-Macro-V1.mtx** macro to process the NEMS-FT-IR spectrum. Drag and drop the background spectrum from step 1 and the validation spectrum from step 2 into the corresponding fields of the macro, then press continue.
4. Verify that the polystyrene peak of the processed validation spectrum at 1601.25 cm^{-1} falls within the range highlighted in Figure 1.

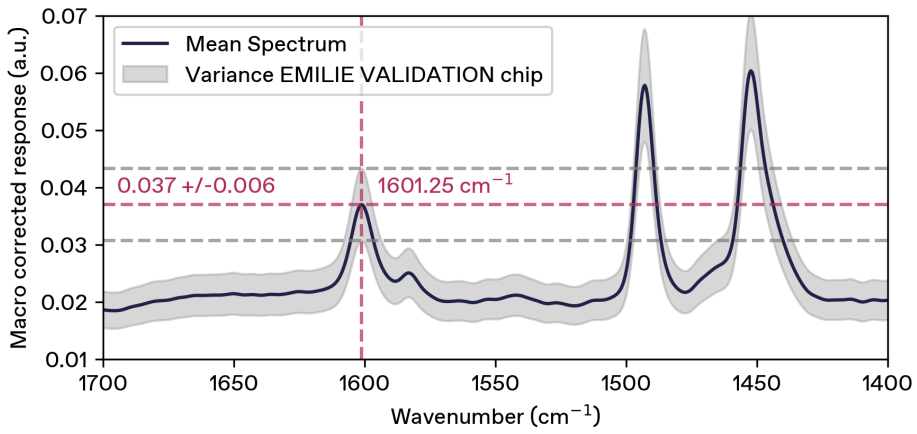


Figure 1: NEMS-FT-IR spectra of an EMILIE™ VALIDATION chip after application of the "EMILIE-Validation-Macro-V1.mtx". The shaded band marks the acceptance range at 1601.25 cm^{-1}.

PASS CRITERION

0.037 ± 0.006 a.u.

Processed polystyrene peak absorbance at 1601.25 cm^{-1}. A result outside this band indicates the setup needs attention before samples are run.