

# Study of the Optical Properties of Thermoresponsive Polymer Grafted from Porous silicon scaffolds

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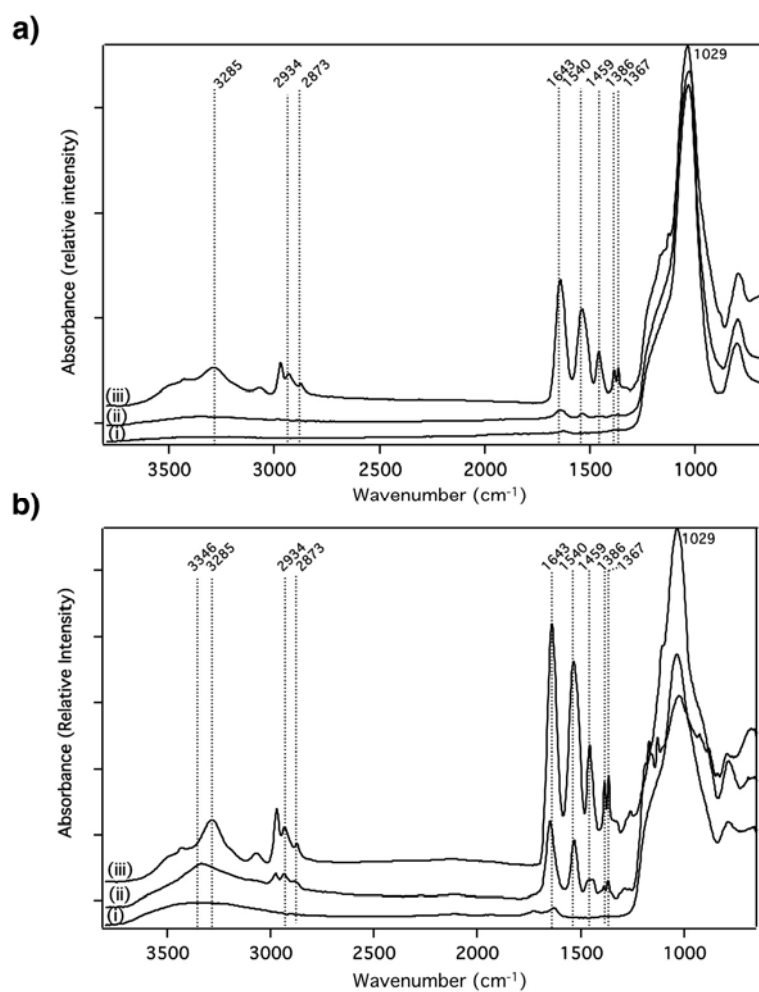
## Supplementary information

### FTIR characterization of the samples modified by the path A and the path B:

FTIR spectra of the pSi surfaces modified according to path A (a) and path B (b) are presented in Figure S1 for (i) a pSi surface modified by oxidation, (ii) the previously oxidized pSi surface after reaction with the (3-(2-bromoisobutyramido)propyl(triethoxy)silane) (BIBAPTES) by silanization and (iii) after NIPAM polymerization. On spectrum (i) of the graphic (a) and (b), the strong band at 1029  $\text{cm}^{-1}$  was assigned to the Si–O stretching vibrational mode. Spectrum (b, i) also exhibited a broad band at 3346  $\text{cm}^{-1}$  assigned to the silanols engaged in a medium-strong hydrogen bond interactions with adsorbed water.

After the reaction between the BIBAPTES and the oxidized pSi surface, bands were observed in spectra (a, ii) and (b, ii) at 1540  $\text{cm}^{-1}$  corresponding to the amide II N–H bending vibrations, 1643  $\text{cm}^{-1}$  for the amide I C=O stretching vibration. Finally, bands were observed at 1459, 2873 and 2934  $\text{cm}^{-1}$  due to the C–H vibrational the surface.

After the polymerization reaction, the sharp band was observed in spectra (a, iii) and (b, iii) at 3285  $\text{cm}^{-1}$  was assigned to the hydrogen bonded O–H (intermolecular) stretching vibrational mode, characteristic from a polymer. Bands at 1367  $\text{cm}^{-1}$  and 1386  $\text{cm}^{-1}$  were attributed to the asymmetrical deformation of the isopropyl group of the PNIPAM. FTIR data therefore confirm the presence of the PNIPAM on the pSi surface.



**Figure S1.** FTIR-ATR spectra for pSi surface modified following path A (a), (i) after the thermal oxidation at 600°C for 1 hour, (ii) after the silanization reaction for introducing the initiator to the surface and (iii) after polymerization of NIPAM, and following path B (b), (i) after the ozone oxidation, (ii) after the silanization reaction for introducing the initiator to the surface and (iii) after polymerization of NIPAM.