

Silica NanospringsTM 1/4

MATERIAL DATA SHEET	
PHYSICAL INFORMATION	
MATERIAL:	Silica Nanosprings TM
COLOR:	reddish white
COMPOSITION:	SiO ₂ Nanosprings TM attached to substrate
STRUCTURE:	Amorphous.
NANOSPRING TM MASS:	0.5±0.085 mg/cm ²
COATING MASS:	NA
TOTAL MASS:	0.5±0.085 mg/cm ²
WIRE DIAMETER:	87.1±45.2 nm
COIL DIAMETER:	191.8±43.6 nm
COIL PITCH:	315.5±110.5 nm
SURFACE AREA	350m ² /g
POROSITY:	0
MELTING POINT:	1035°C (sublimes)
MAXIMUM TEMPERATURE:	Substrate dependent, if below melting point.
SUBSTRATE:	Al foil, SST, glass, glass frits, Si wafers, cordierite, fiberglass cloth

CHARACTERIZATION

fe-SEM

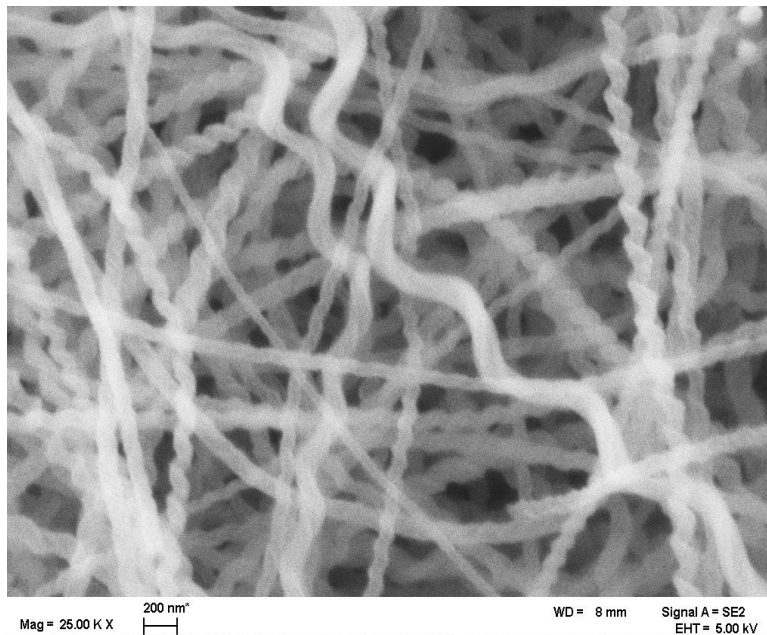


Figure 1: fe-SEM of a Silica NanospringTM mat.

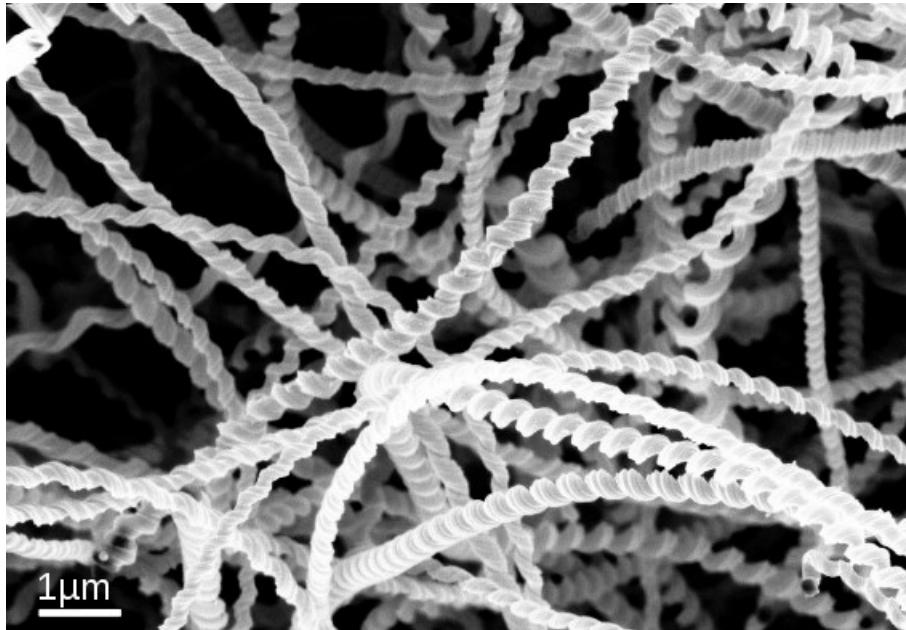


Figure 2: fe-SEM of a Silica Nanospring[™] mat.

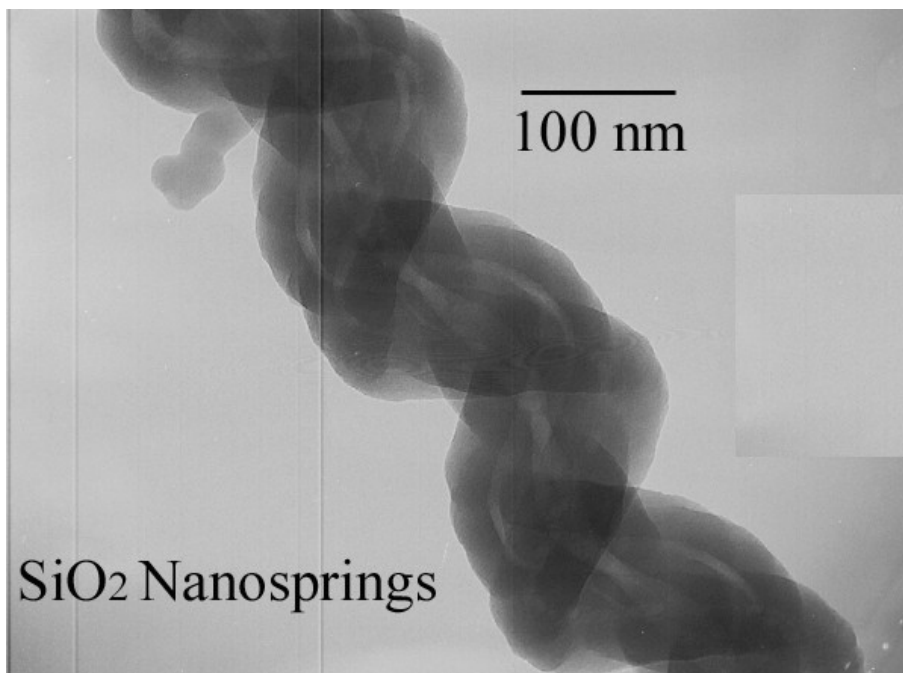
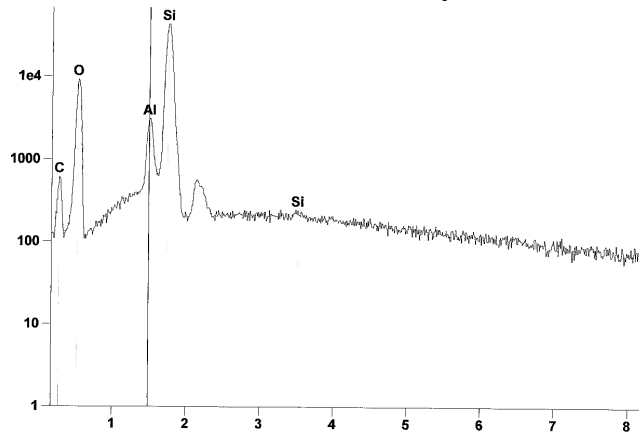


Figure 3: TEM of a Silica Nanospring[™] mat.
TEM

Elemental Analysis



Element	Net Counts	Net Counts Error	Weight %	Weight % Error	Atom %	Atom % Error
C	2533	+/- 91	6.01	+/- 0.22	10.00	+/- 0.36
O	54742	+/- 328	42.86	+/- 0.26	53.53	+/- 0.32
Al	21847	+/- 293	2.76	+/- 0.04	2.05	+/- 0.03
Si	389807	+/- 1400	48.37	+/- 0.17	34.42	+/- 0.12
Total			100.00		100.00	

Figure 4: fe-SEM-EDS analysis of a silica Nanospring™ mat on Al foil.

CHEMICAL ANALYSIS

XPS

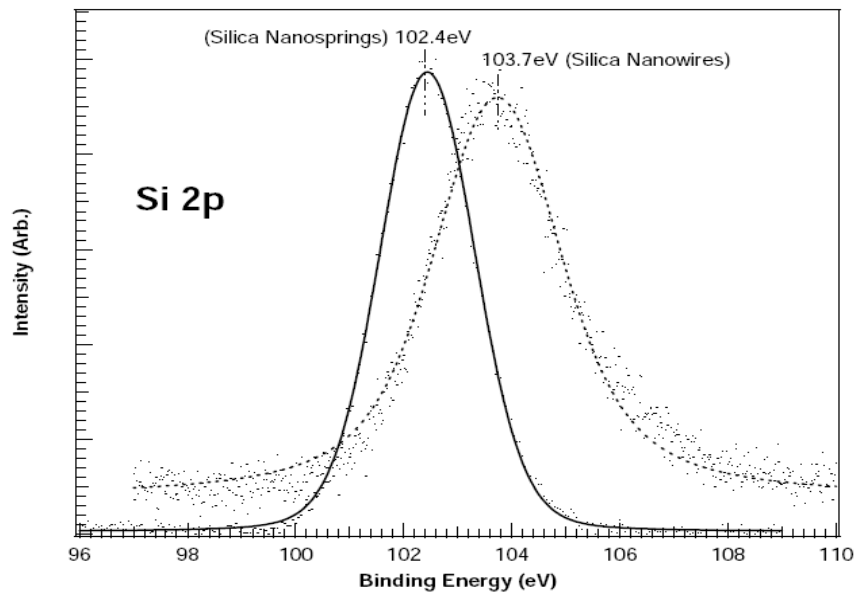


Figure 5: XPS binding energy of a silica Nanospring™ compared to a silica nanowire.

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IR

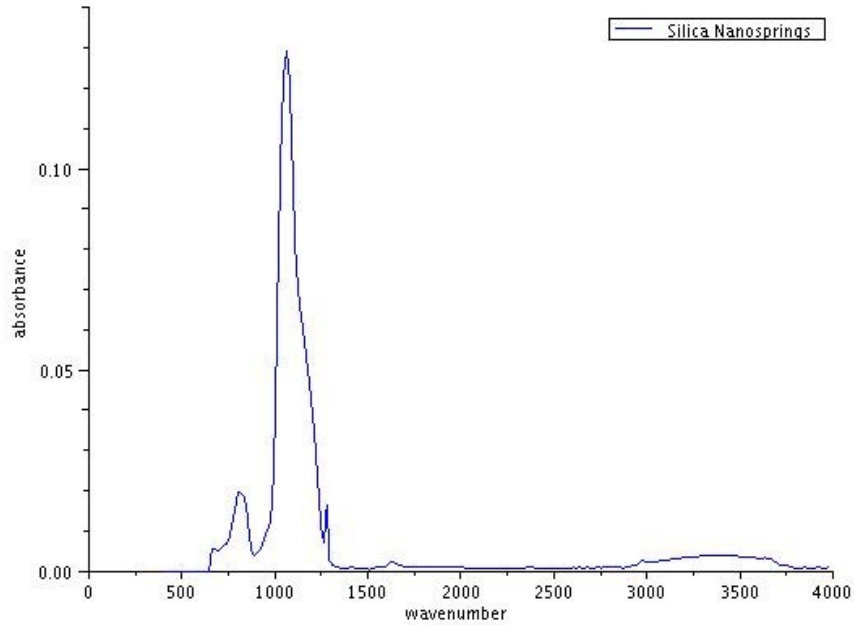


Figure 6: InfraRed spectra of a silica NanospringTM.

N₂-ISOTHERM

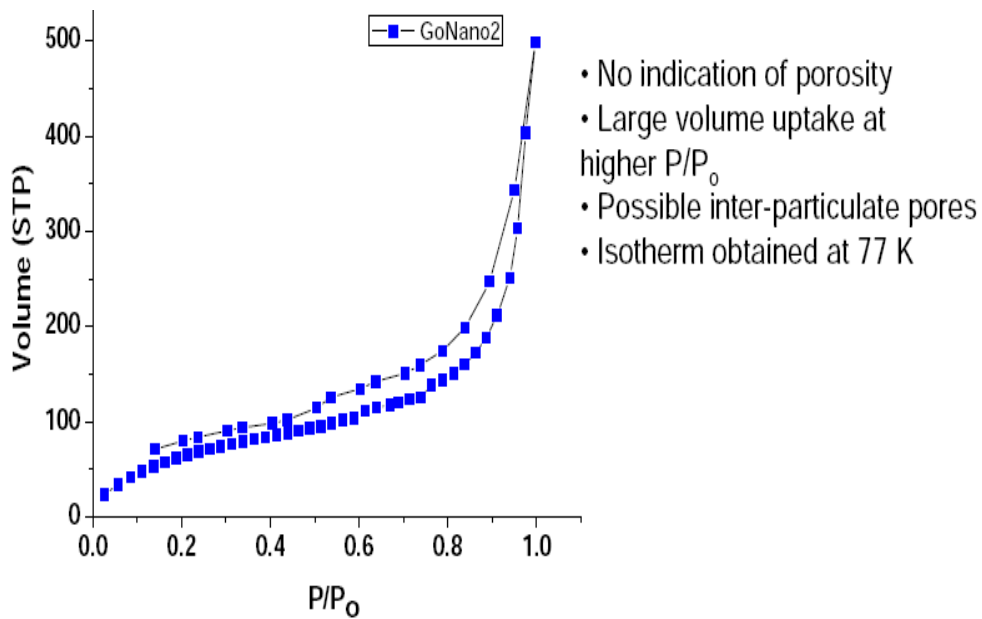


Figure 7: N₂-isotherm measurement of silica NanospringsTM.