

Supplementary Information

An in-vitro study on collective tumor cell migration on nanoroughened poly(dimethylsiloxane) surfaces

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Polystyrene-acetone interaction

It has been previously reported that acetone is a poor solvent of polystyrene, though lower molecular weight polystyrene can be dissolved in acetone.^{1, 2} To verify the hypothesis that partially dissolved polystyrene created the rough surface topography, we performed additional experiments to characterize the polystyrene-acetone system. Specifically, acetone was added to a petri-dish and maintained for 3 min, after which the supernatant was removed and analyzed using gas chromatography coupled with a mass spectrometry (GC-MS). A quadrupole ion trap mass spectrometer coupled with a Thermo Finnigan trace GC ultra was used to examine the presence of polystyrene in the solution. Figure S1 shows the molecular weight of the components at different retention times. Figure S1 shows the detection of monomers (mol. Wt = 104.1 g/mol in Fig.S1a) and dimers (mol. Wt = 207.0 g/mol in Fig.S1b) measured by the mass spectrometer. The results showed the detection of only monomers and dimers, while longer chain oligomers were not detected even at higher retention times, which may be due to the repeated fragmentation of the polystyrene molecules in ion trap based mass spectrometer for more accurate measurement.³

References

1. C. E. H. Bawn and M. A. Wajid, *Transactions of the Faraday Society*, 1956, 52, 1658-1664.
2. M. Luszczuk, L. P. N. Rebelo and W. A. Van Hook, *Macromolecules*, 1995, 28, 745-767.
3. A. Saraf, J.-H. Park, D. K. Milton and L. Larsson, *Journal of Environmental Monitoring*, 1999, 1, 163-168.

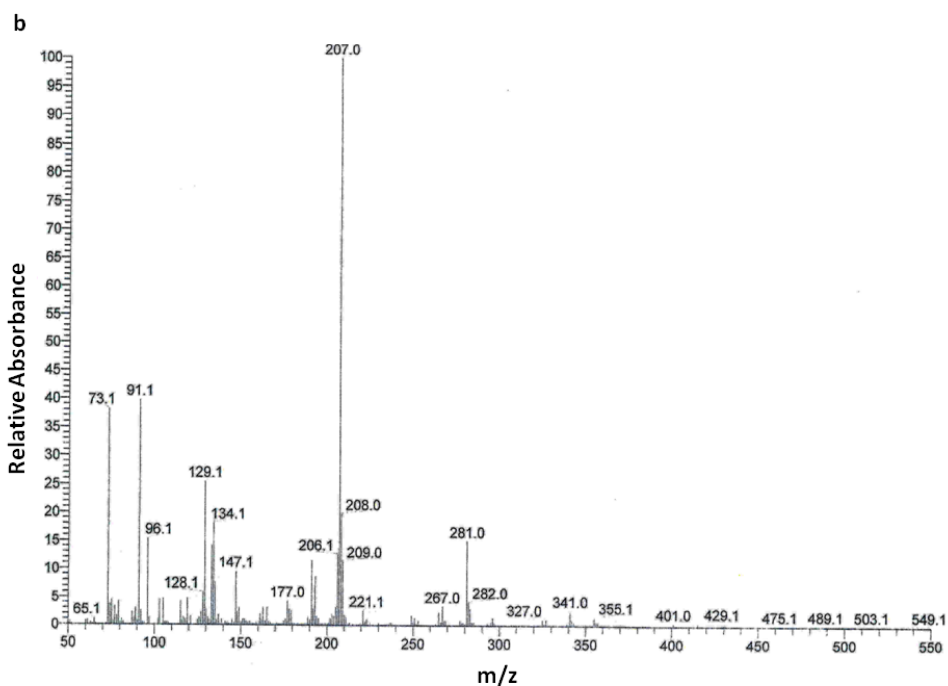
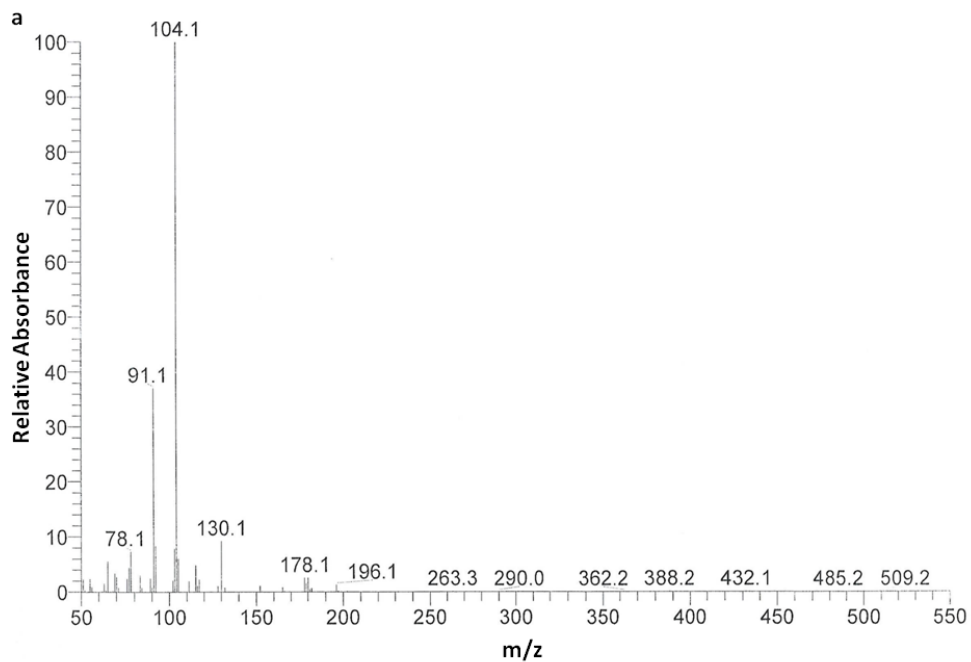


Figure S1: Characterization of the dissolved lower chain polystyrene oligomers using GC-MS. Detection of the polystyrene monomer (104 g/mol) at a retention time of 7.65 min (a) and the polystyrene dimer (207 g/mol) at a retention time of 10.42 min (b).