Electronic Supplementary Material (ESI) for Polymer Chemistry.

Antiviral mechanism change of poly(styrene sulfonate) through gold nanoparticle coating

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Table 1: Zeta potential of **PSS-AuNP** measured with a 2mg/mL solution of Au-NPs in deionised water

	Zeta Potential (mV, 2 dp)	Mobility (μmcm/Vs, 2dp)
PSS-AuNP	-53.63 (SD +/- 1.10)	-4.20 (SD +/- 0.09)

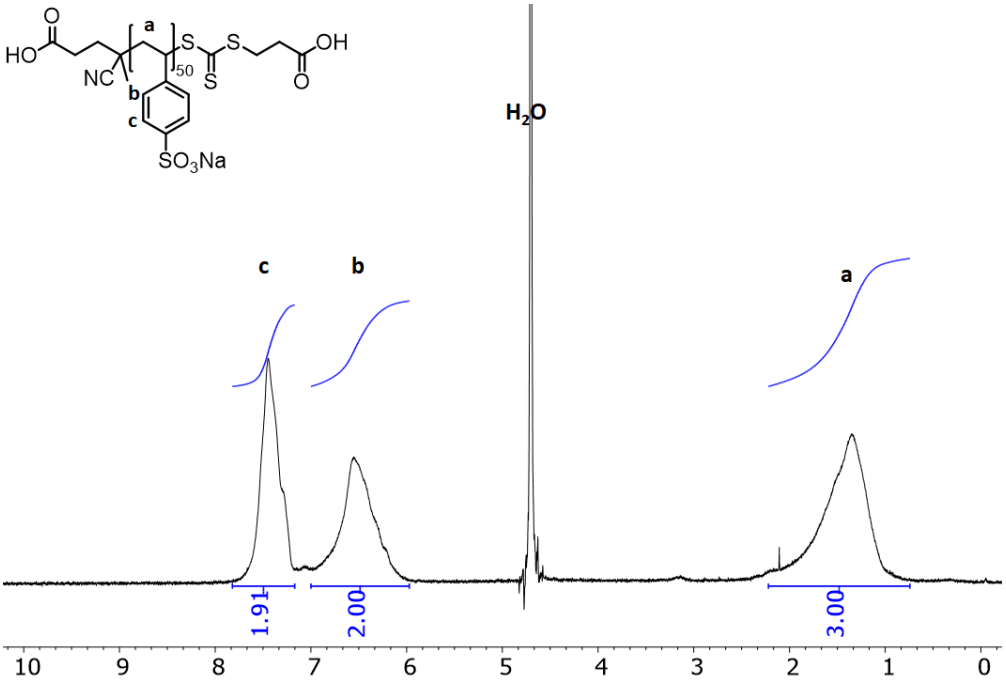

Figure S1: ^{1}H NMR of L-PSS measured in D_2O

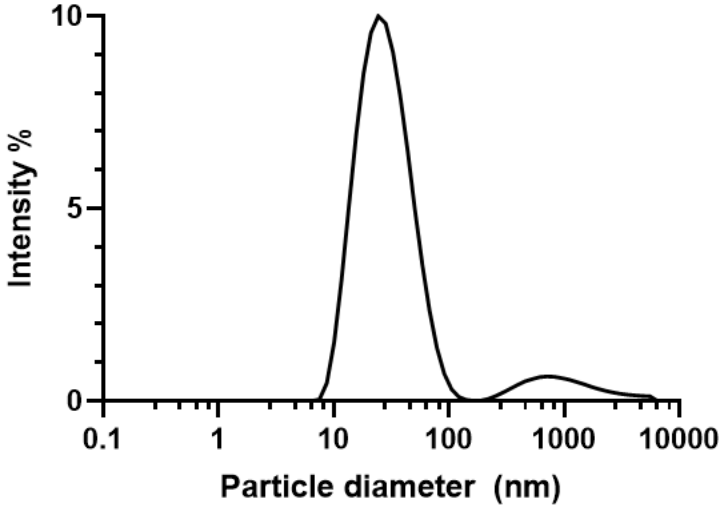

Figure S2: Intensity DLS plot of PSS-AuNP measured in deionised water.

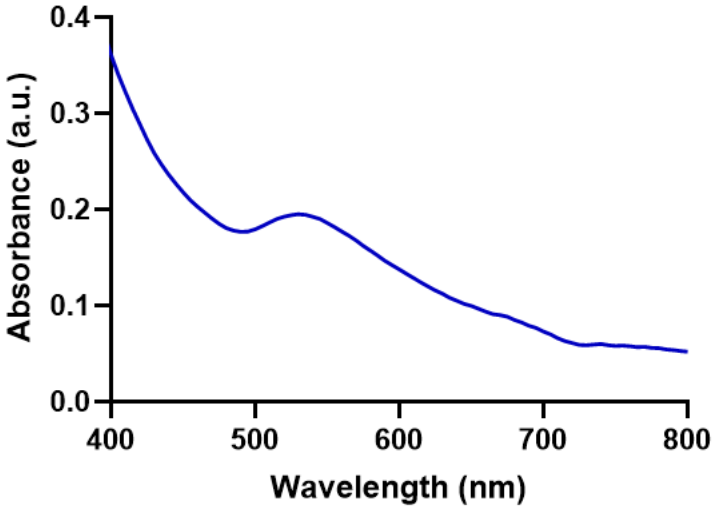

Figure S3: UV/vis spectrum of **PSS-AuNP** (2mg/mL) showing an absorbance λ=530 nm

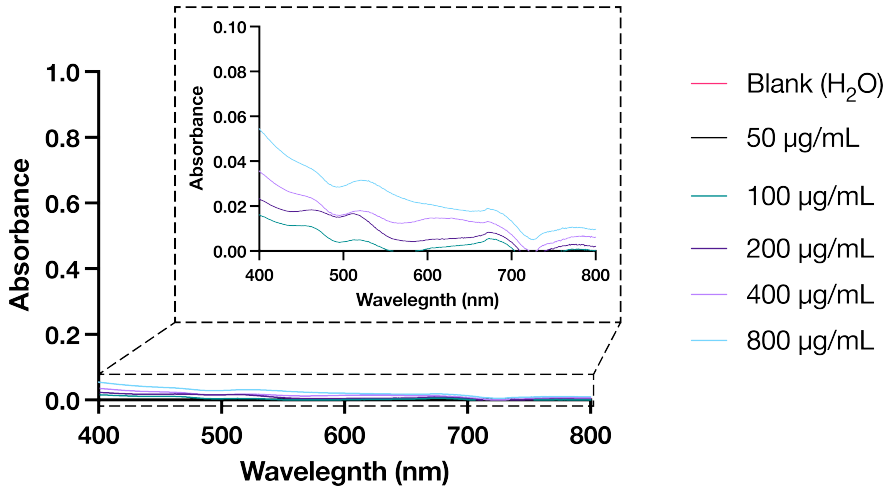

Figure S4: UV/vis spectrum of **PSS-AuNP** from 800μg/mL to 50 μg/mL with minimal absorbance at λ=490 nm across all samples, showing that these concentrations do not affect the MTS assay readings.

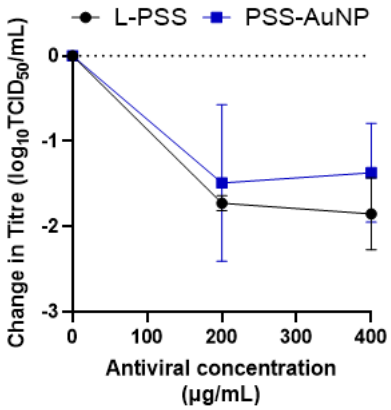

Figure S5: $TCID_{50}$ values for **L-PSS** and **PSS-AuNP** incubated with RSV for 1 hour at 37 °C

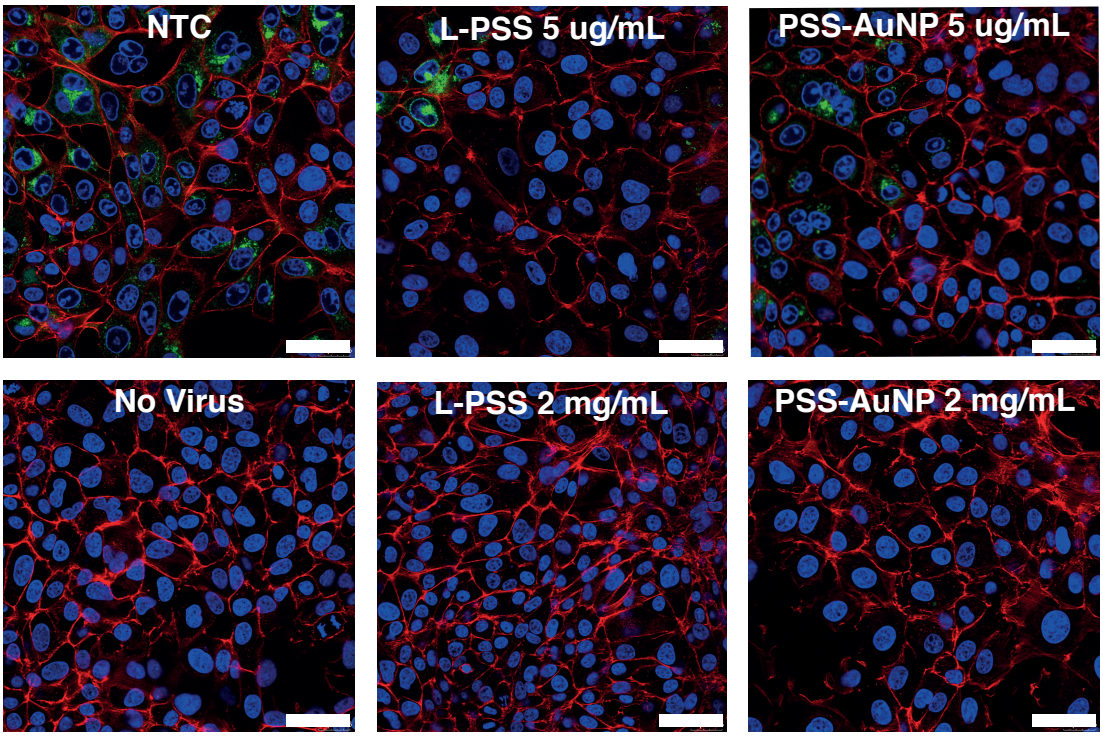

Figure S6: HSV-2 was mixed in a 1:1 ratio with liquid solutions of L-PSS and PSS-AuNP at varying concentrations. Coverslips were fixed after 24 hours and labelled for viewing via confocal microscopy. Virus is prevalent across the monolayer in the no-treatment control (NTC), and no virus is present in the no virus control. Some degree of infection is visible for both materials at 5 µg/mL, but no virus is observed at 2 mg/mL concentration. HSV-2 in green, phalloidin in red, cell nuclei in blue. Scale Bars = 50 µm

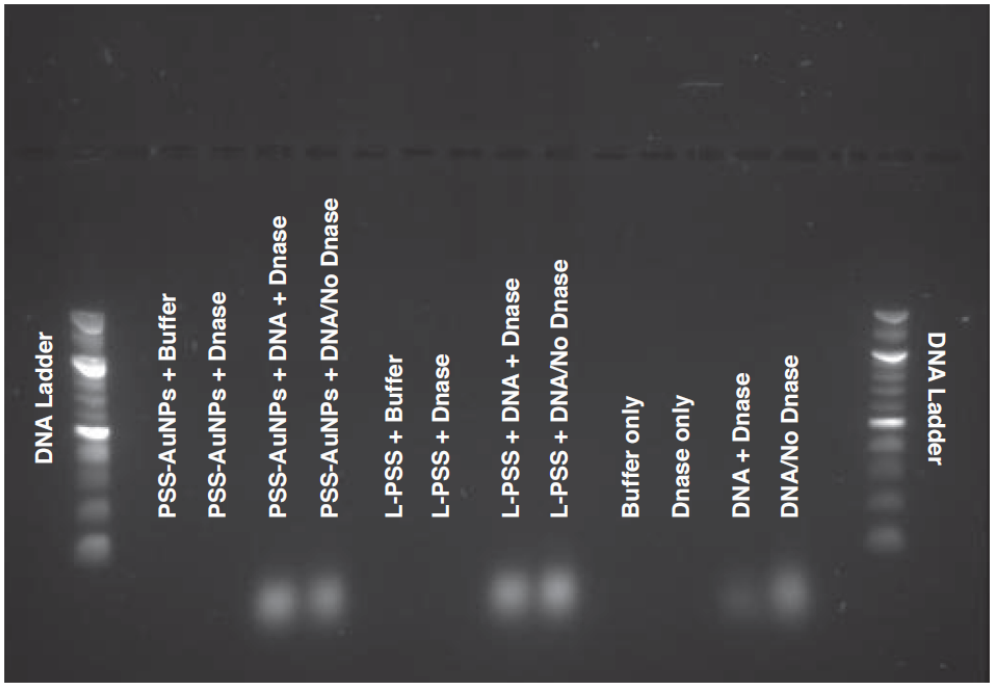

Figure S7: **The effect of PSS materials on DNAse**. 5 µL of 1 mg/mL DNA (SIGMA 74782) was mixed and incubated with 5 µL of 1 mg/mL PSS material or PBS, 17 μL DNAse (Thermofisher, AM2239) or DNAse-free water and 2 µL DNase buffer for 1 hr. After deactivation of the DNase per manufacturers instructions, the samples were then run on a 2 wt% agarose gel at 100 volts. As can be seen, the activity of DNAse was inhibited in the presence of the PSS materials (DNA concentration in wells containing DNA+material+dnase is comparable to that in wells containing just DNA, and is significantly higher than that in wells containing DNA+DNase without PSS materials). This rendered any attempts at utilising the DNA exposure assay unreliable.