

## SUPPORTING INFORMATION

### **Nanoceutical Fabric Prevents COVID-19 Spread through Expelled Respiratory Droplets: A Combined Computational, Spectroscopic and Anti-microbial Study**

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**Local alignment results between SARS-CoV-2 spike protein and lecA of *P. aeruginosa*.**

The best non-identical alignments are:

	ls-w	bits	E(1)	%_id	%_sim	alen
6LZG_B Spike glycoprotein Severe ac ( 209)	52	18.8	0.053	0.281	0.625	32
+-	45	16.9	0.19	0.243	0.622	37
+-	35	14.1	0.76	0.281	0.562	32
+-	30	12.7	0.98	0.833	1.000	6
+-	29	12.4	0.99	0.364	0.727	11
+-	29	12.4	0.99	0.500	0.562	16
+-	29	12.4	0.99	0.400	0.600	10
+-	26	11.6	1	0.214	0.571	28
+-	26	11.6	1	0.261	0.565	23
+-	26	11.6	1	0.286	0.571	14
+-	26	11.6	1	0.308	0.769	13

>>>4YWA\_A|PA-I, 121 aa vs lalign-I20201121-055742-0421-60153165-p2m.bsequence library

>>6LZG\_B|Spike glycoprotein|Severe acute respiratory syn (209 aa)  
 Waterman-Eggert score: 52; 18.8 bits; E(1) < 0.053  
 28.1% identity (62.5% similar) in 32 aa overlap (14-45:149-180)

```

                20      30      40
4YWA_A QVTSIIYNPGDVITIVAAGWASYGPTQKWGPQ
      . . . . . : : : . : : : : : : : :
6LZG_B DISTEIQAGSTPCNGVEGFNCYFPLQSYGFQ
      150      160      170      180
  
```

>--  
 Waterman-Eggert score: 45; 16.9 bits; E(1) < 0.19  
 24.3% identity (62.2% similar) in 37 aa overlap (7-43:92-128)

```

        10      20      30      40
4YWA_A LANNEAGQVTSIIYNPGDVITIVAAGWASYGPTQKWG
      . : : : : : : : : : : : : : : : : :
6LZG_B IAPGQTGKIADYNYKLPDDFTGCVIAWNSNNLDSKVG
      100      110      120
  
```

>--  
 Waterman-Eggert score: 35; 14.1 bits; E(1) < 0.76  
 28.1% identity (56.2% similar) in 32 aa overlap (1-32:34-63)

```

        10      20      30
4YWA_A AWKGEVLANNEAGQVTSIIYNPGDVITIVAAG
      : : . . . : : : : : : . : : :
6LZG_B AwnrKRISNCVADY--SVLYNSASFSTFKCYG
      40      50      60
  
```

>--  
Waterman-Eggert score: 30; 12.7 bits; E(1) < 0.98  
83.3% identity (100.0% similar) in 6 aa overlap (108-113:52-57)

```
      110
4YWA_A NSGSFS
      : : : : :
6LZG_B NSASFS
```

>--  
Waterman-Eggert score: 29; 12.4 bits; E(1) < 0.99  
36.4% identity (72.7% similar) in 11 aa overlap (68-78:153-163)

```
      70
4YWA_A KIGNSGTIPVN
      . : . . . : :
6LZG_B EIYQAGSTPCN
      160
```

>--  
Waterman-Eggert score: 29; 12.4 bits; E(1) < 0.99  
50.0% identity (56.2% similar) in 16 aa overlap (35-48:176-191)

```
      40
4YWA_A SYG--PTQKWGPQGDR
      : : : : : : :
6LZG_B SYGFQPTNGVGYQPYPYR
      180      190
```

>--  
Waterman-Eggert score: 29; 12.4 bits; E(1) < 0.99  
40.0% identity (60.0% similar) in 10 aa overlap (23-32:86-95)

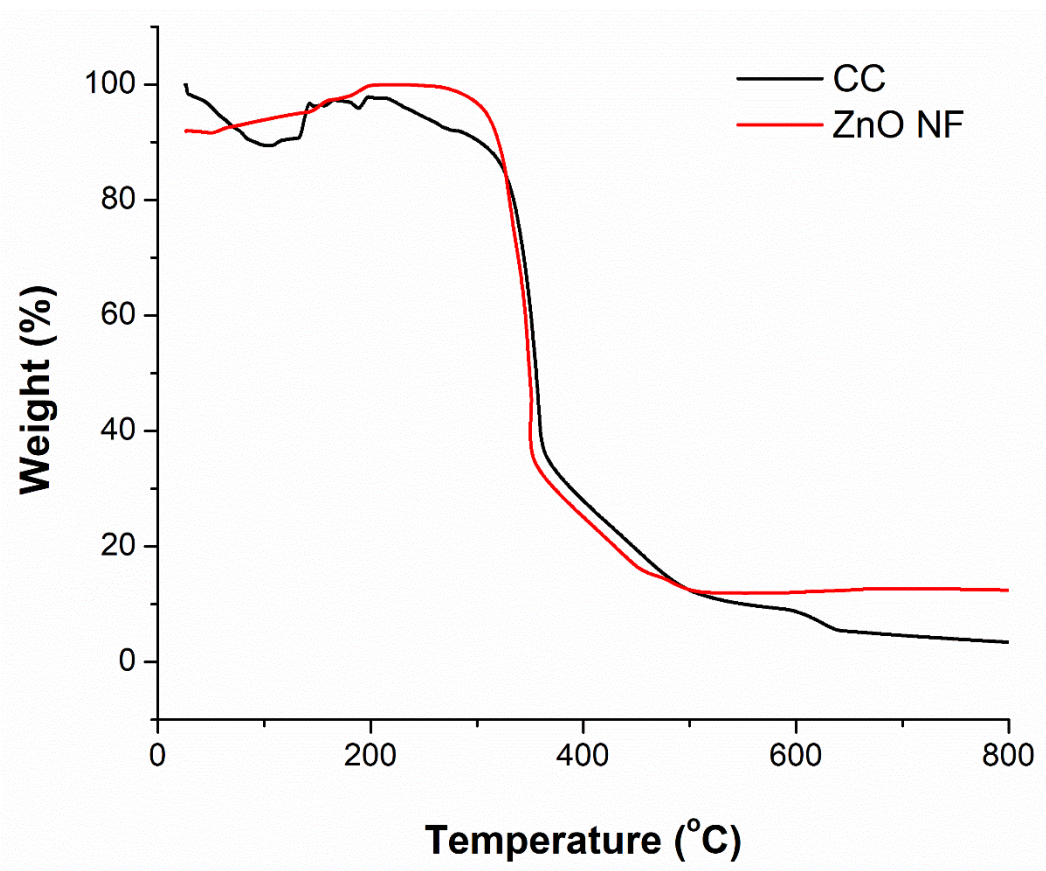
```
      30
4YWA_A GDVITIVAAG
      : : . . : :
6LZG_B GDEVRQIAPG
      90
```

>--  
Waterman-Eggert score: 26; 11.6 bits; E(1) < 1  
21.4% identity (57.1% similar) in 28 aa overlap (82-108:103-130)

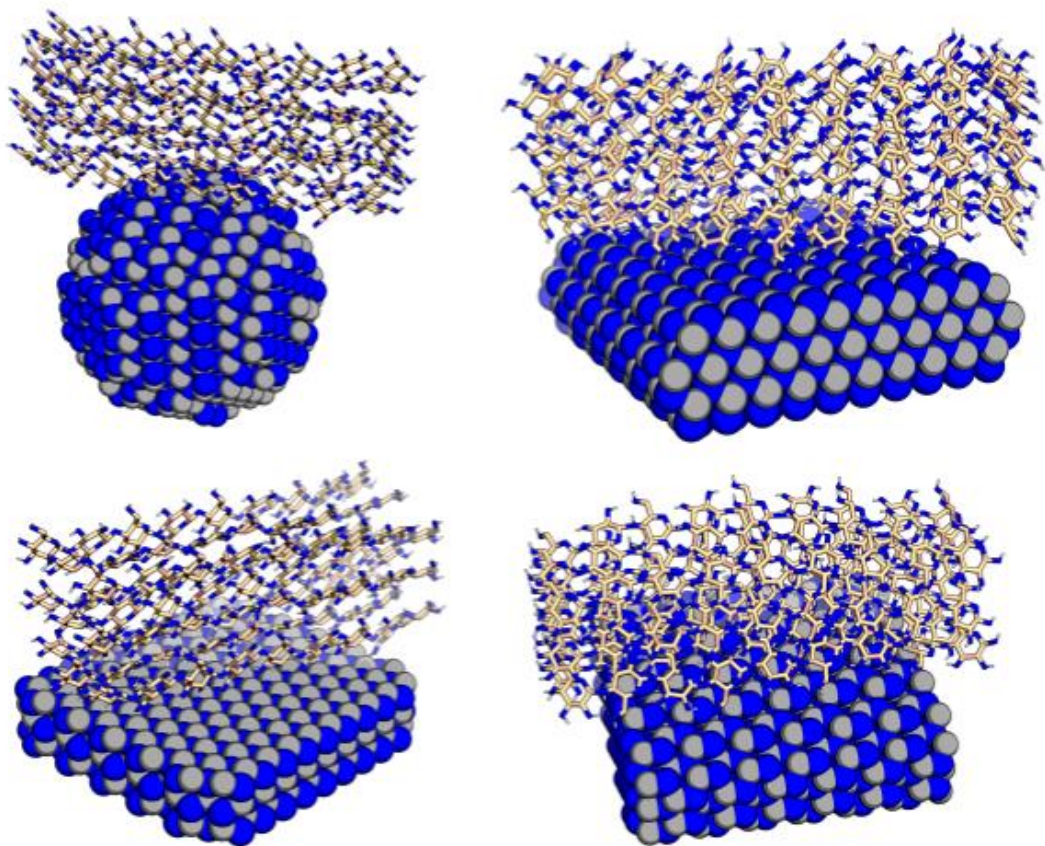
```
      90      100
4YWA_A FRWVAPNNVQG-AITLIYNDVPGTYGNN
      . . : . . : : . . : : :
6LZG_B YNYKLPDDFTGCVIAWNSNNLDSKVGGN
      110      120      130
```

>--  
Waterman-Eggert score: 26; 11.6 bits; E(1) < 1  
26.1% identity (56.5% similar) in 23 aa overlap (83-105:90-111)

```
      90      100
4YWA_A RWVAPNNVQGAITLIYNDVPGTY
      : : : : : : : : :
6LZG_B RQIAPGQT-GKIADYNYKLPDDF
      90      100      110
```



Supplementary Figure S1. TG data of ZnO NF decorated cotton cloth and bare cotton cloth.



**Supplementary Figure S2. Binding of ZnO with cellulose fiber.**