

```

1 #PSP_Poiseuille.py
2 from vpython import scene, curve, arrow, vector
3 import numpy as np
4
5 scene.background=vector(1,1,1)
6 scene.title = ""
7
8 l = 5.
9 R = 1.
10 D_P = 40.
11 eta = 1.
12
13 angles=arange(1.1*pi,2.1*pi,pi/20.)
14 n = 500
15 for i in range(n):
16     spring=curve(color=vector(0,1,1), radius=0.06)
17     for phi in angles:
18         spring.append(pos=vector(l*(float(i)/float(n)-0.55), R*cos(phi), R*sin(phi)))
19
20 for i in range(11):
21     x = 0
22     y = (float(i)/11.-0.5)*2.*R
23     r = np.sqrt(x*x+y*y)
24     if (r < R):
25         arrow(pos=vector(0,y,x),axis = vector(D_P * (R*R-r*r)/(eta*l*4.),0,0),
26             shaftwidth = 0.035, color=vector(0,0,0))

```

Define the length of capillary,
radius, DeltaP, viscosity

Make the curved surface to
express the half of capillary

Visualize the velocity distribution of Hagen-
Poiseuille flow in the capillary by arrows