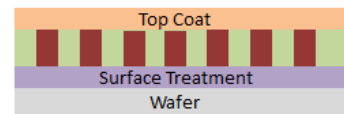
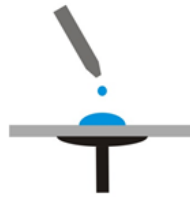
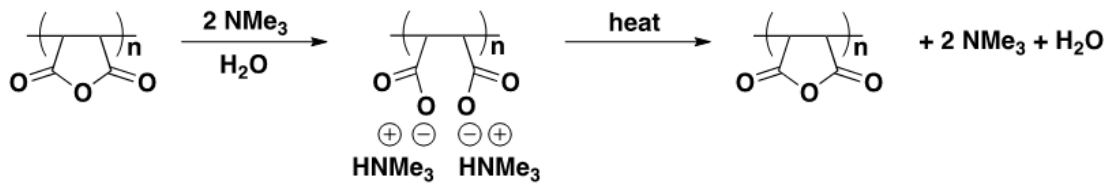


FIGURE 1



Not soluble in polar casting solvent
Cannot spin-coat onto block copolymer

- Spin-coatable out of base
- BUT, now it has a high surface energy because it is very polar

- Lower surface energy!
- Enables perpendicular orientation of block copolymer

FIGURE 2

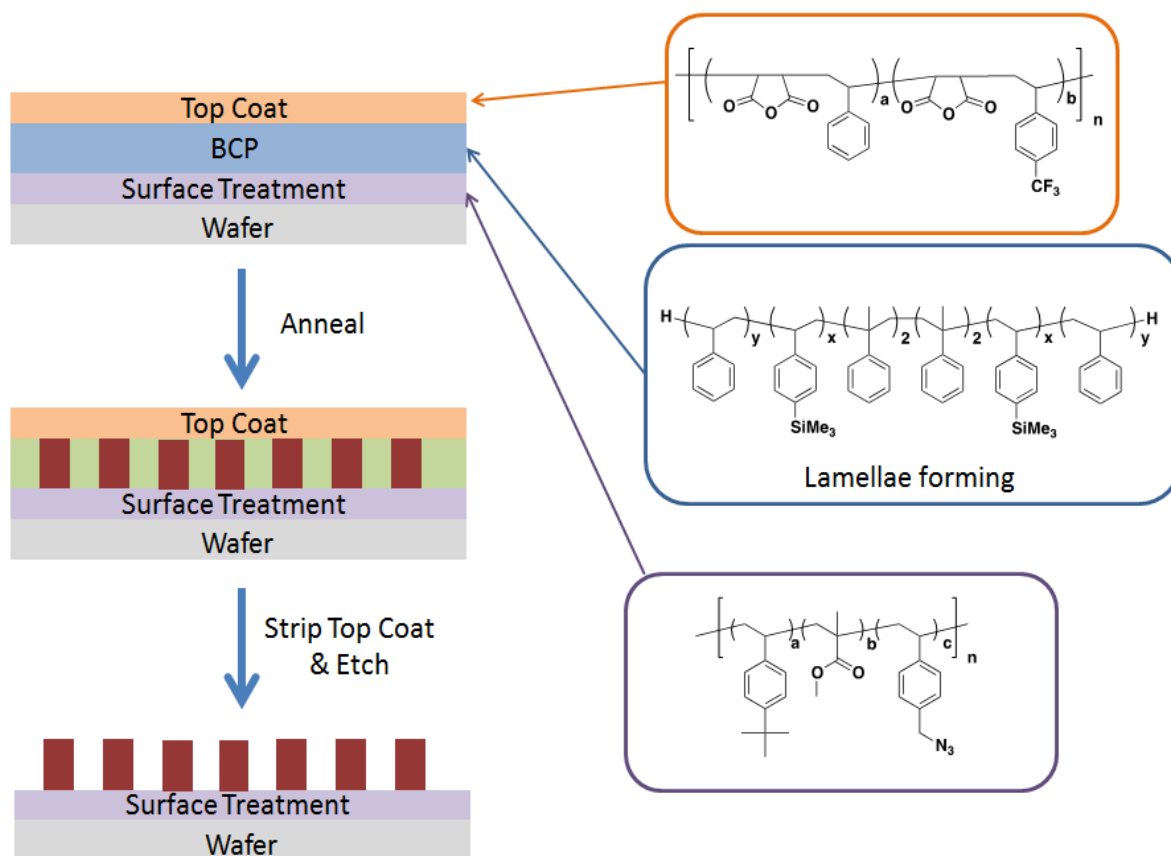
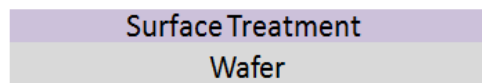


FIGURE 3

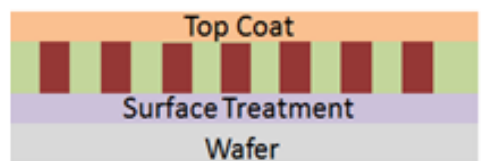
- 1) Surface treatment is dissolved in toluene and spin coated
- 2) Cross-linked at 250 °C for 5 min
- 3) Washed with toluene 2 times



- 4) Block copolymer is dissolved in toluene and spin coated



- 5) Top coat is dissolved in aqueous trimethylamine and spin coated.



- 6) Anneal the thin films at 190 °C for 1 minute.



- 7) Strip the top coat by spinning the wafer at 3000 rpm and applying 40 drops of aqueous trimethylamine followed by 10 drops of methanol



- 8) Oxygen plasma etch the block copolymer with the following conditions:

Pressure=20 mTorr, RF Power=10 W, ICP Power=50 W, O2 flow rate=75 sccm, Argon flowrate=75 sccm, temperature=15 °C, time=30 sec

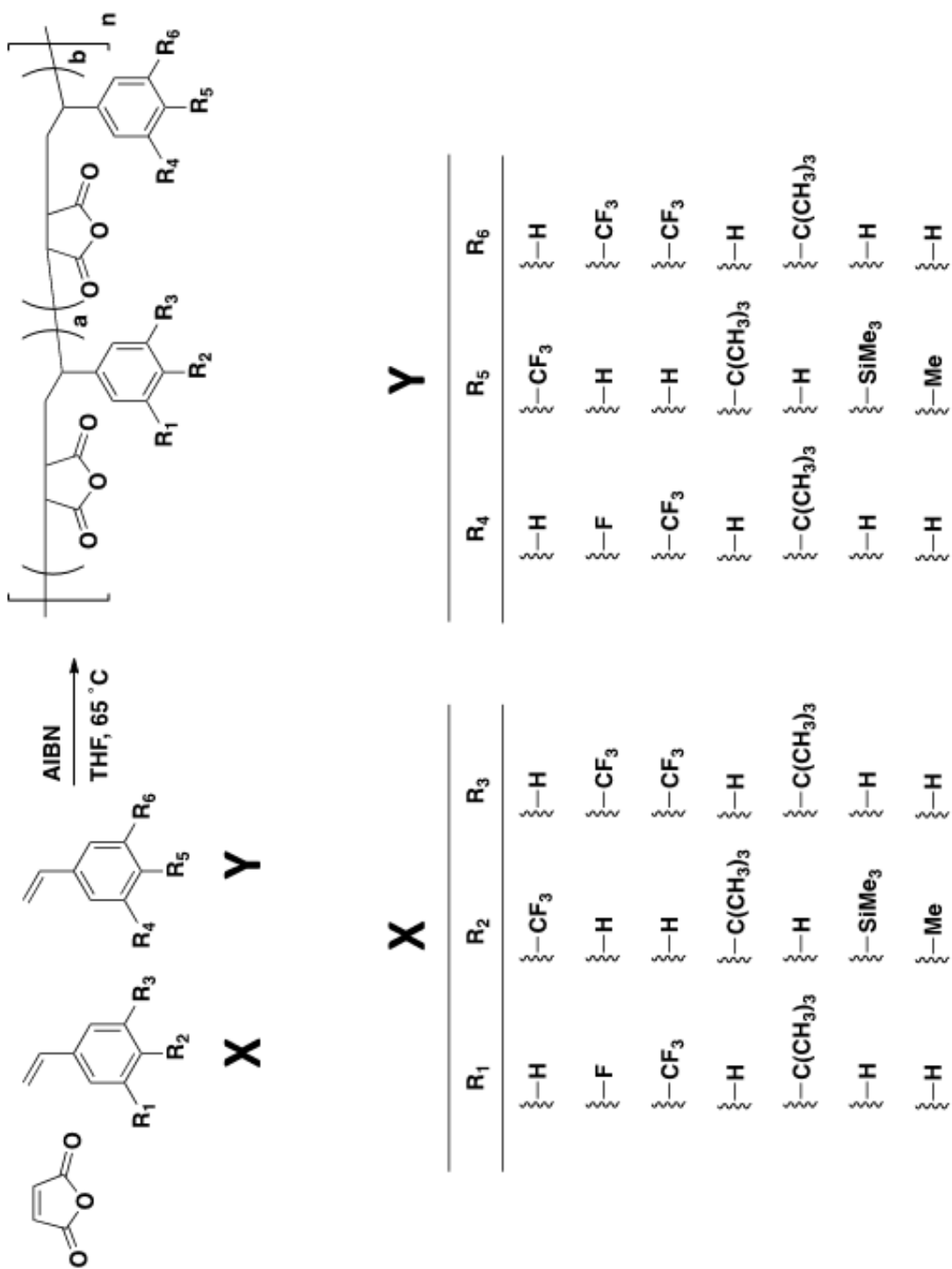
FIGURE 4

FIGURE 5

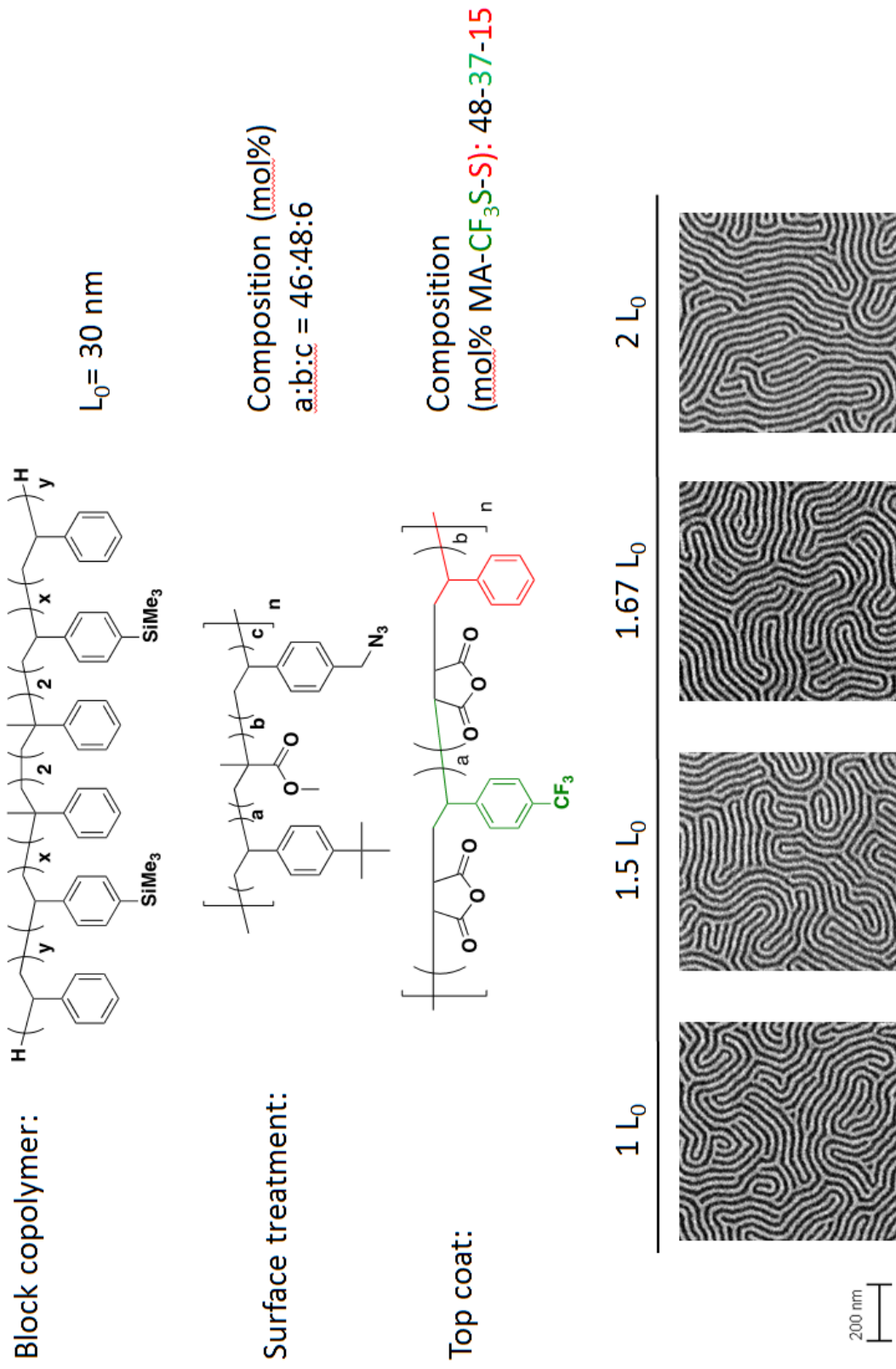


FIGURE 6

