What makes Nanosprings special?

• Crazy surface area – Up to 10,000 times the surface when compared to its root *
• Coatings supply versatility
• Cheap and easy to grow

*V. Dobrokhotov, et al., Toward the nanospring-based artificial olfactory system for trace-detection of flammable and explosive vapors, Sens
Growing springs is cheap and easy

- Furnace – nanosprings can be grown at temperatures as low as 350°C.
- Precursor
- Catalyst
- Oxygen and Nitrogen
Sputtering
Laying down the catalyst via Physical Vapor Deposition

- Ionized Argon Gas
- Large potential difference accelerates the heavy ions
- Ions strike the target breaking the bonds

http://upload.wikimedia.org/wikipedia/en/thumb/7/72/Sputtering.gif/300px-Sputtering.gif
Growing process in the Furnace

precursor

Silica

Au
Atomic Layer Deposition (ALD)

- Easy to control the thickness of the film based on how many cycles are run.
- New delivering method of the precursor
Nanosprings provide have many exciting possibilities

- Left handed media
- Chemiresistors
- Synthetic collagen
Nanosprings as Sensors

(2)
Nanosprings possess traits similar to collagen.
References

2. V. Dobrokhotov, et al., Toward the nanospring-based artificial olfactory system for trace-detection of flammable and explosive vapors, Sens. Actuators B: Chem. (2012), http://dx.doi.org/10.1016/j.snb.2012.03.074