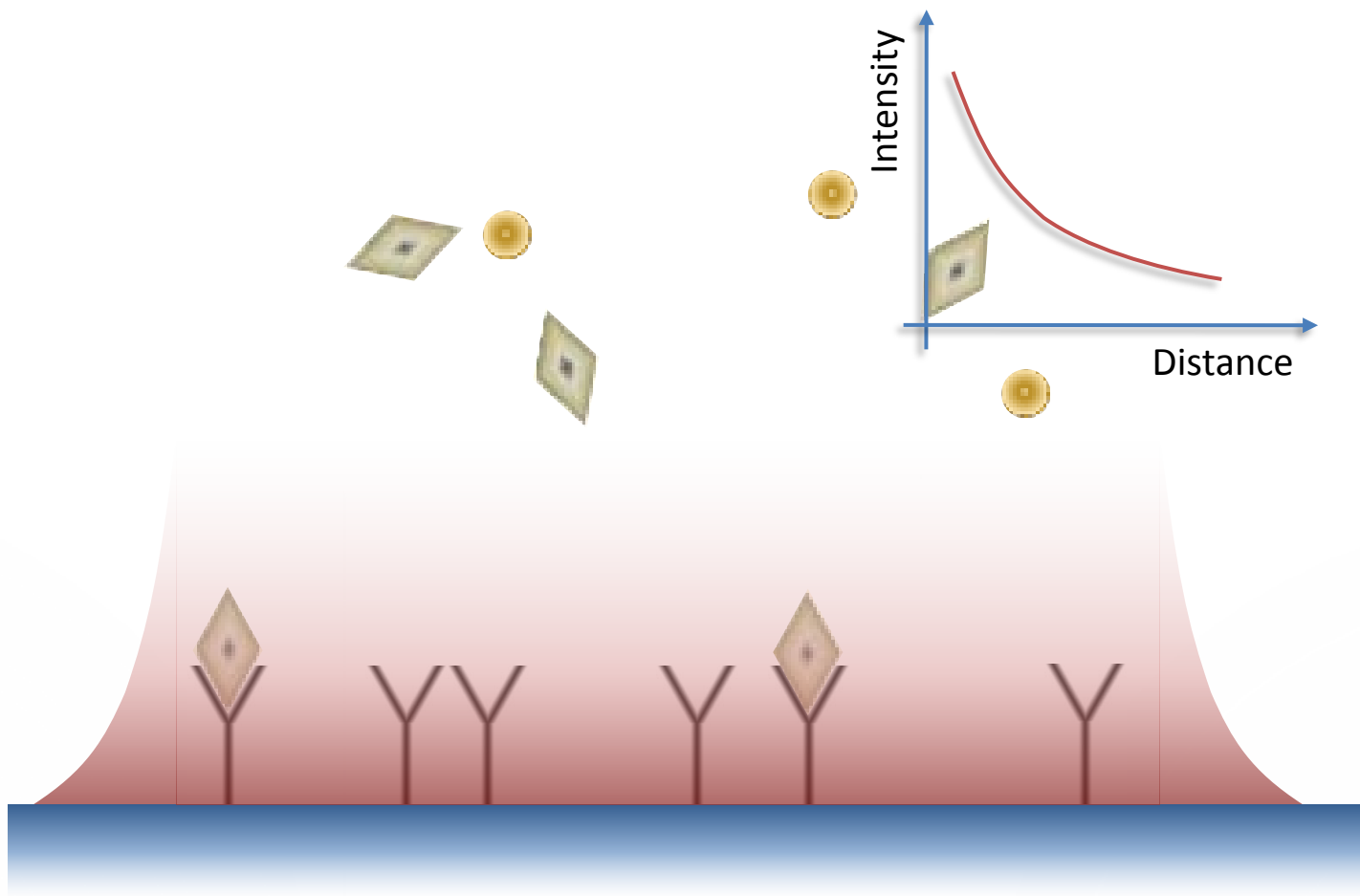


"RAPID PROTOTYPING" OF BIOSENSING SURFACE PLASMON RESONANCE (SPR) DEVICES USING COMSOL & MATLAB SOFTWARE

Presented by
Dominic Carrier

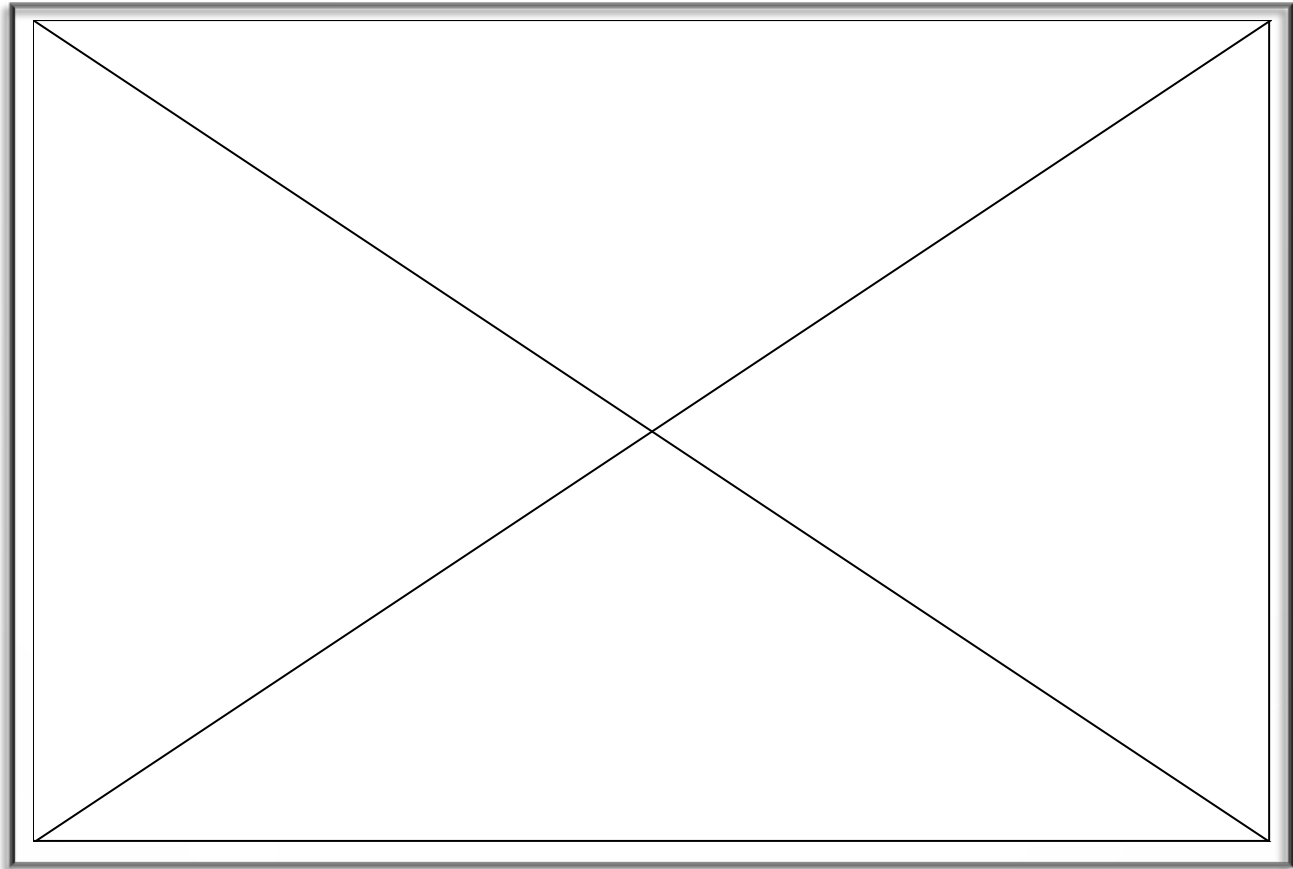
- Introduction
 - *Why do we need biosensing?*
 - *What is biosensing?*
 - *How we do it (with SPR)?*
- Setup
- Results

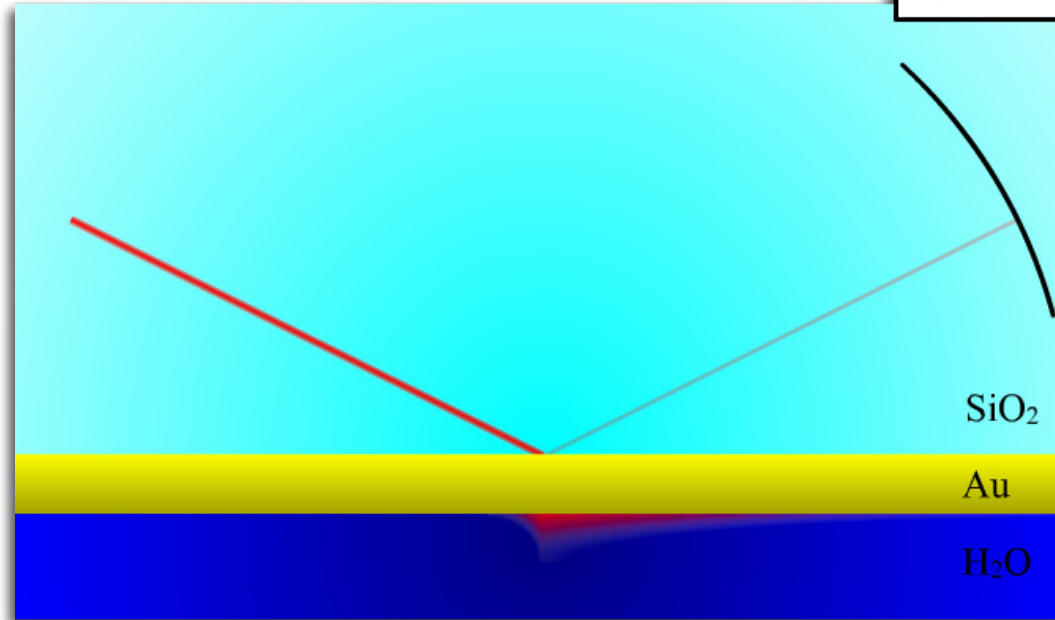
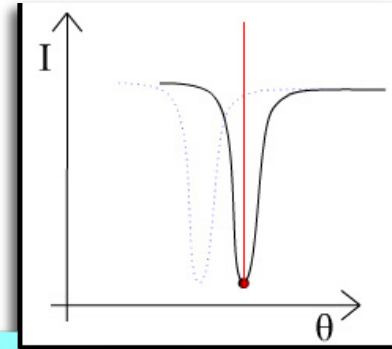


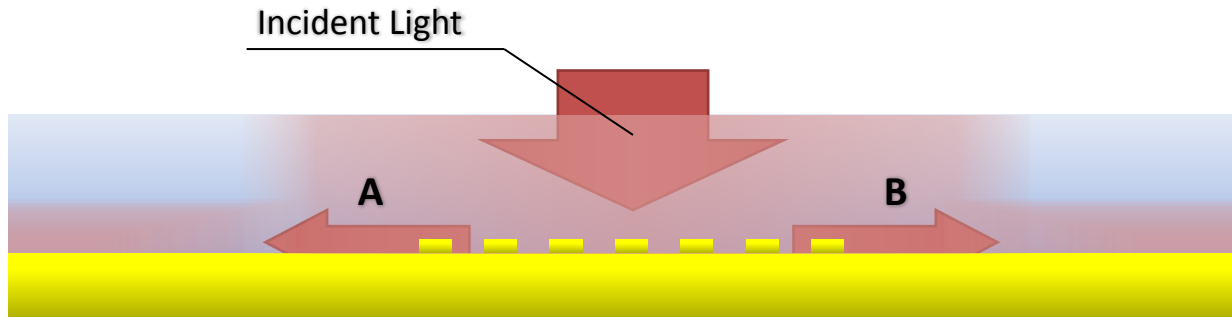


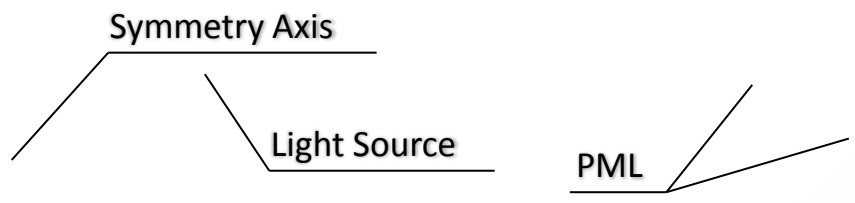
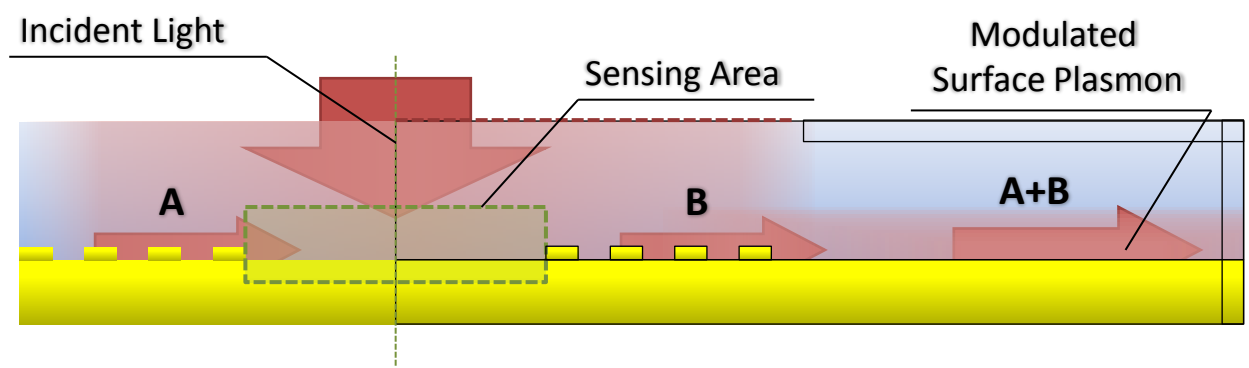


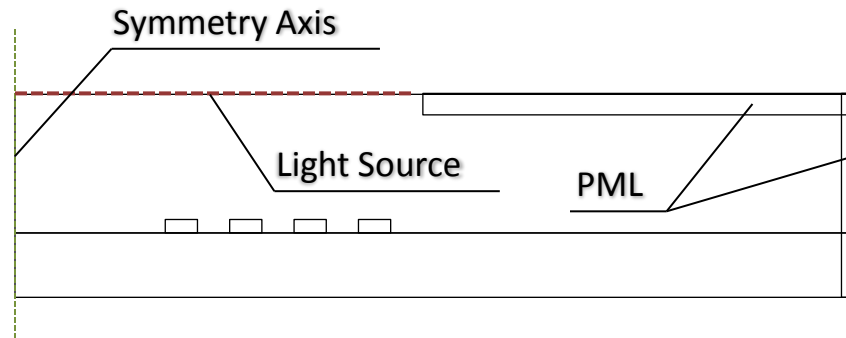
Negative real dielectric constant allows **propagating evanescent surface wave** (a.k.a. Surface plasmons)





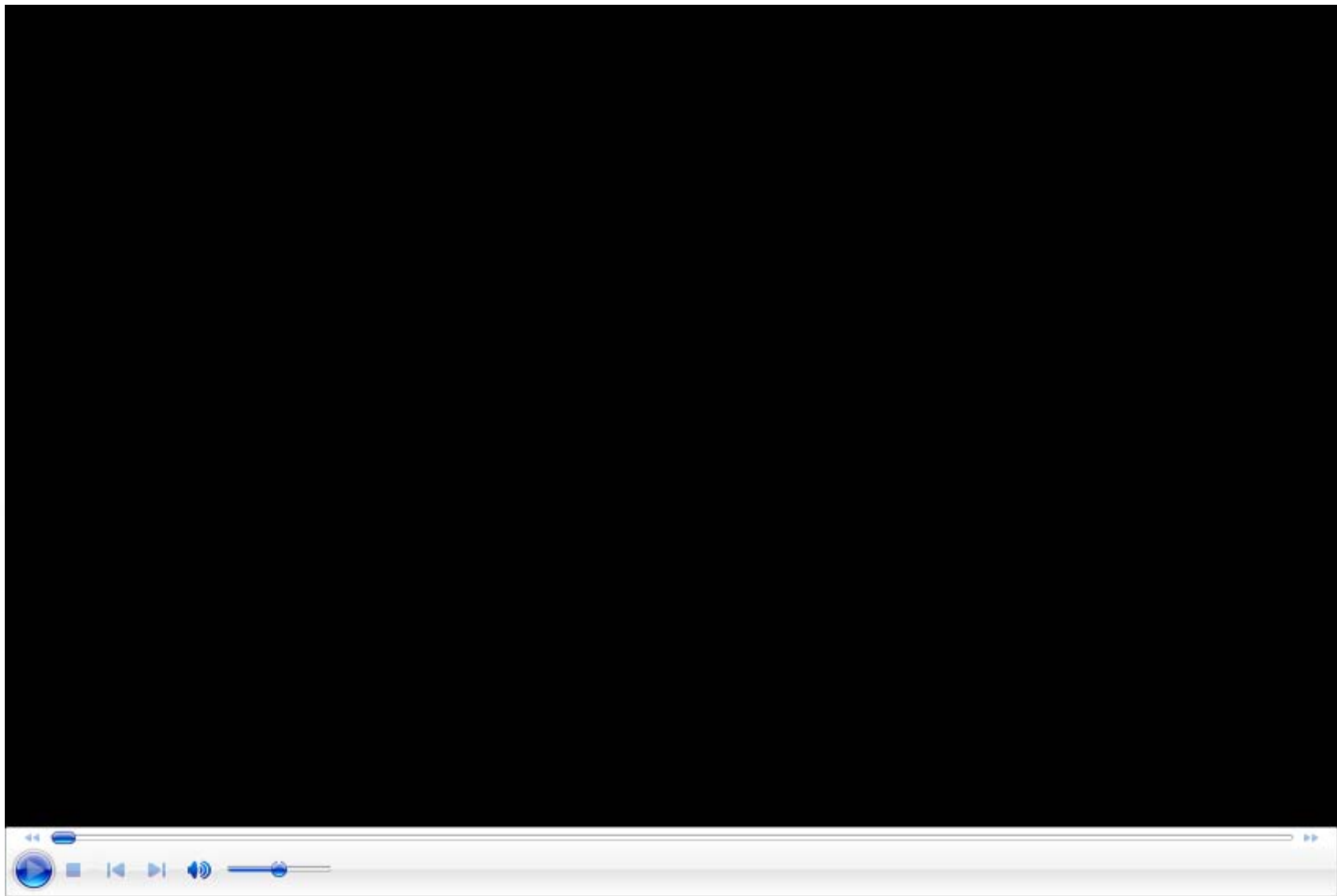




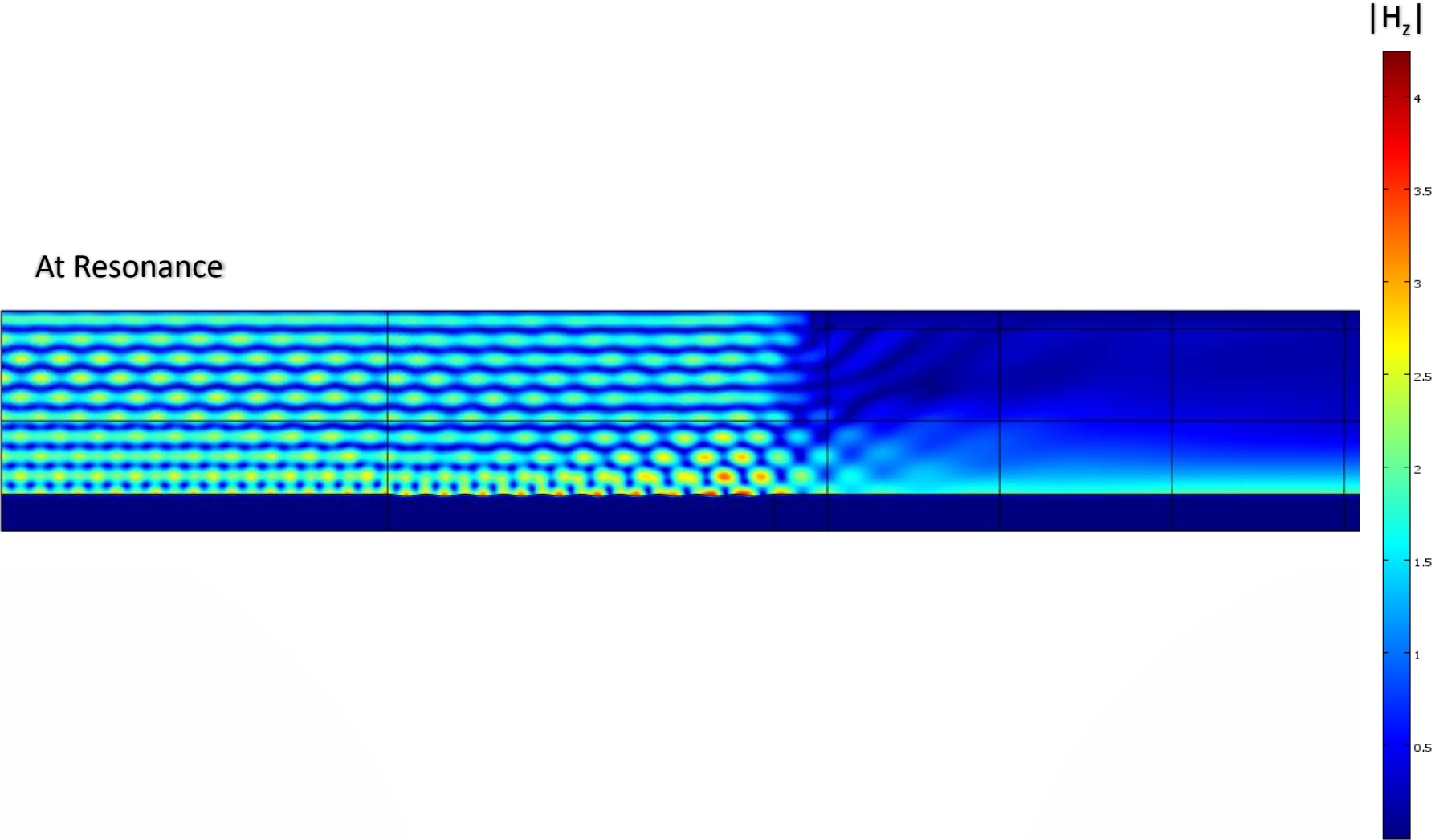


Model Specs:

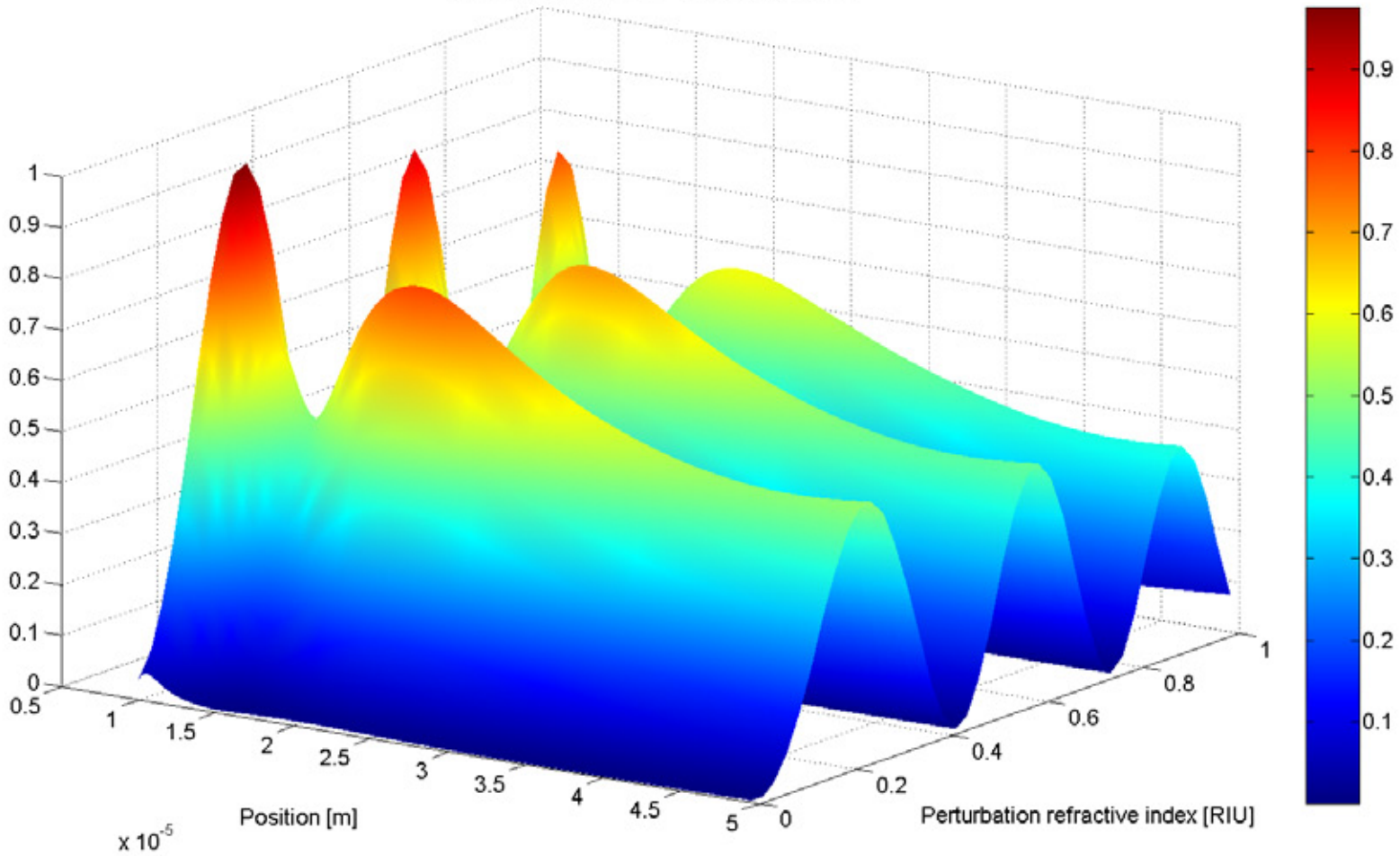
- RF Module : 2D in-plane “Harmonic propagation”
- Typically 20 to 50 um long
- 10 to 20 node elements per wavelength (total ~250 000 elements)



At Resonance



$|H_z|^2$ [A/m]² - Intensity profile of output signal outside of cavity and bounding gratings
Wavelength: 1064 nm - Gold/Air interface



- Successfully achieved reproduction of SPR with Comsol
- Using “rapid-prototyping”, creation of diverse geometry was easy
- Modulation of output signal is observed
- The SP grating cavity is a promising scheme for Biosensing

Prof. Jan J. Dubowski



Canada Research
Chairs

Chaires de recherche
du Canada



Thankyou