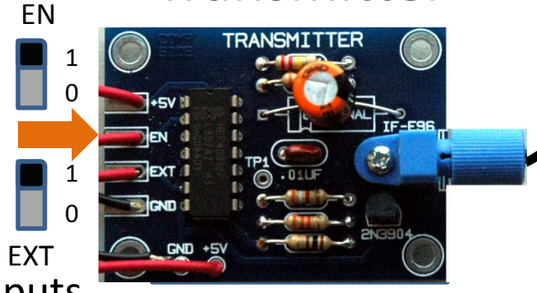
New Materials for the Optic Fiber Network

Transmitter

EN

1,1=Blink
0,1= On
1,0= Off
0,0= Off



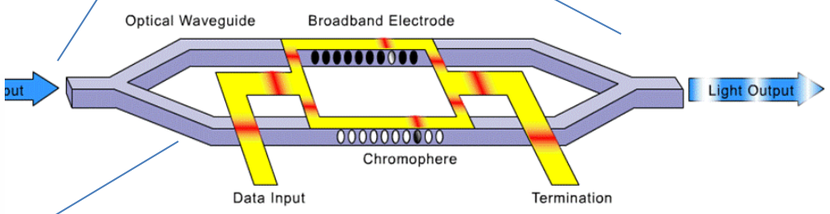
EXT

Data Inputs

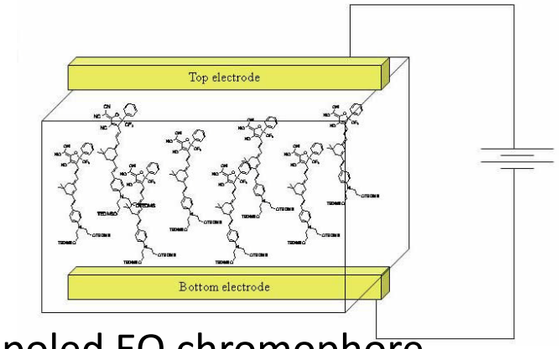
Optic Fiber

Mach- Zehnder Modulator

Optical Signal Modified



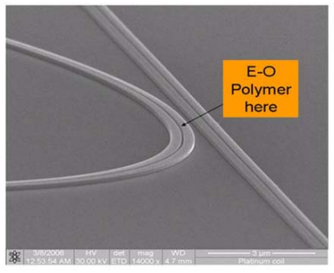
Signal Inputs



A poled EO chromophore

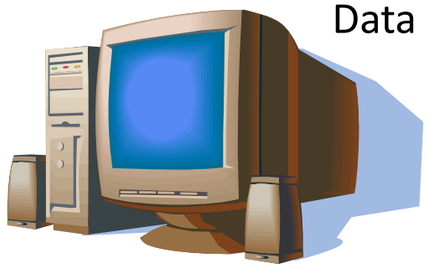
Electrical to Optical Signal

One of the research thrusts of CMDITR is developing organic electronics that can be used in information technology and telecommunications. At the heart of this is the modulation of light using new organic electro-optical materials. A optic fiber network carries information between electronic devices using light. A modulator in the light path can further modify the digital signal. Electro-optic materials in the modulator can change their index of refraction in the presence of an electric field. Then using interference the light can be switch on and off. Organic materials used in this way makes ultrahigh speed switching possible. Finally, electro-optical and all-optical switches can be miniaturized to the nano-scale to take advantage of other unique properties in device design.

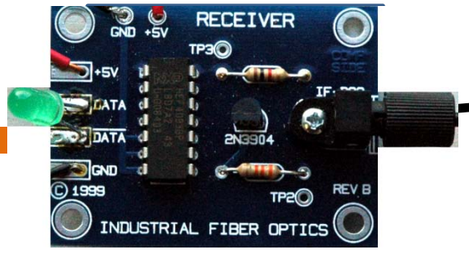


Next step:
Nanotechnology-photonic integration

Receiver



Data Outputs



Optical Signal to Electrical