

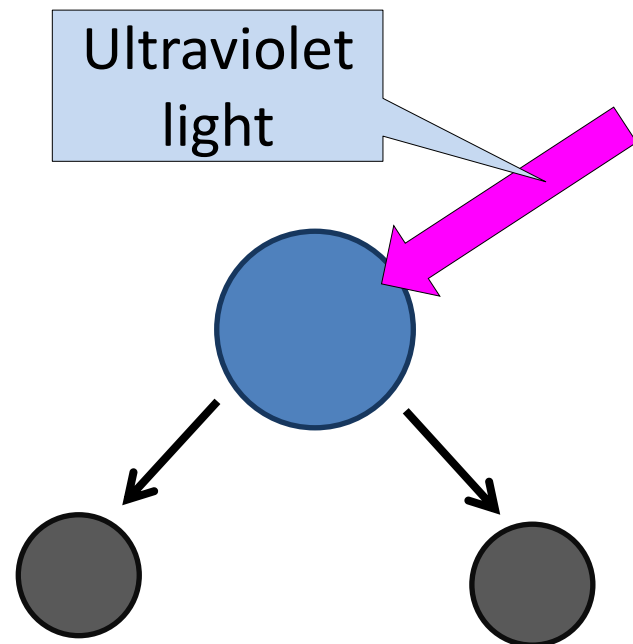
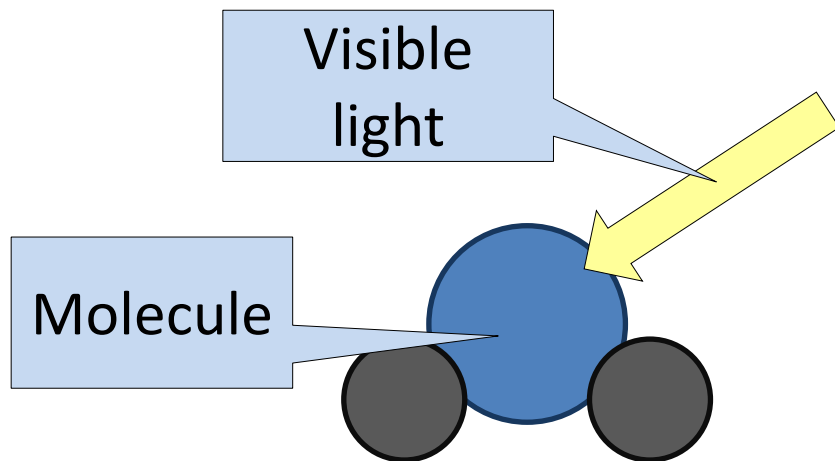
Phase Transition to self-controlled  
deposition state of charged  
particles on a surface  
by Dressed Photons

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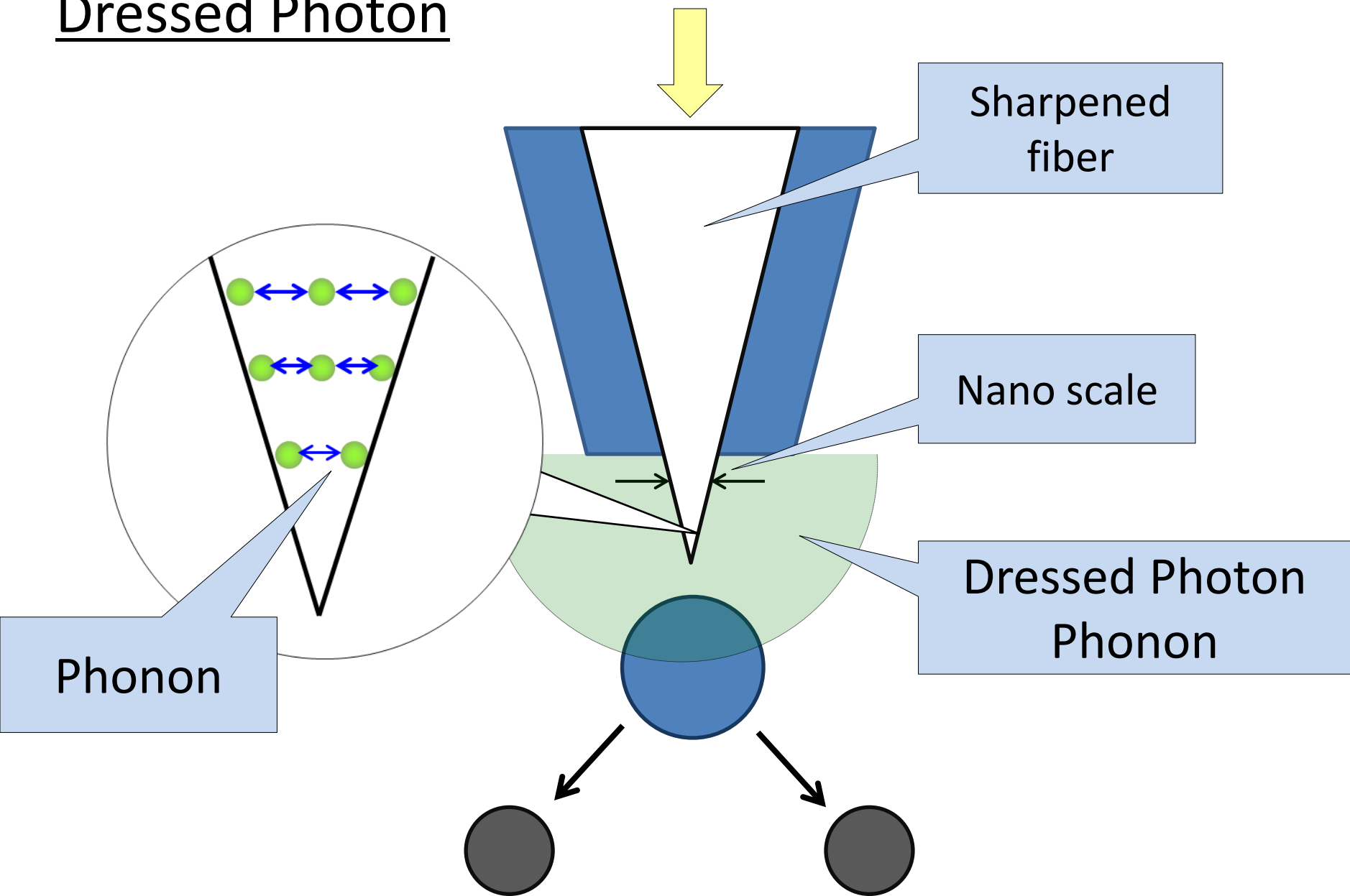
1 July 2014

# Dressed Photon



$$h\nu_{\text{vis}} < E_{\text{dis}} < h\nu_{\text{UV}}$$

# Dressed Photon



# Briefly ...

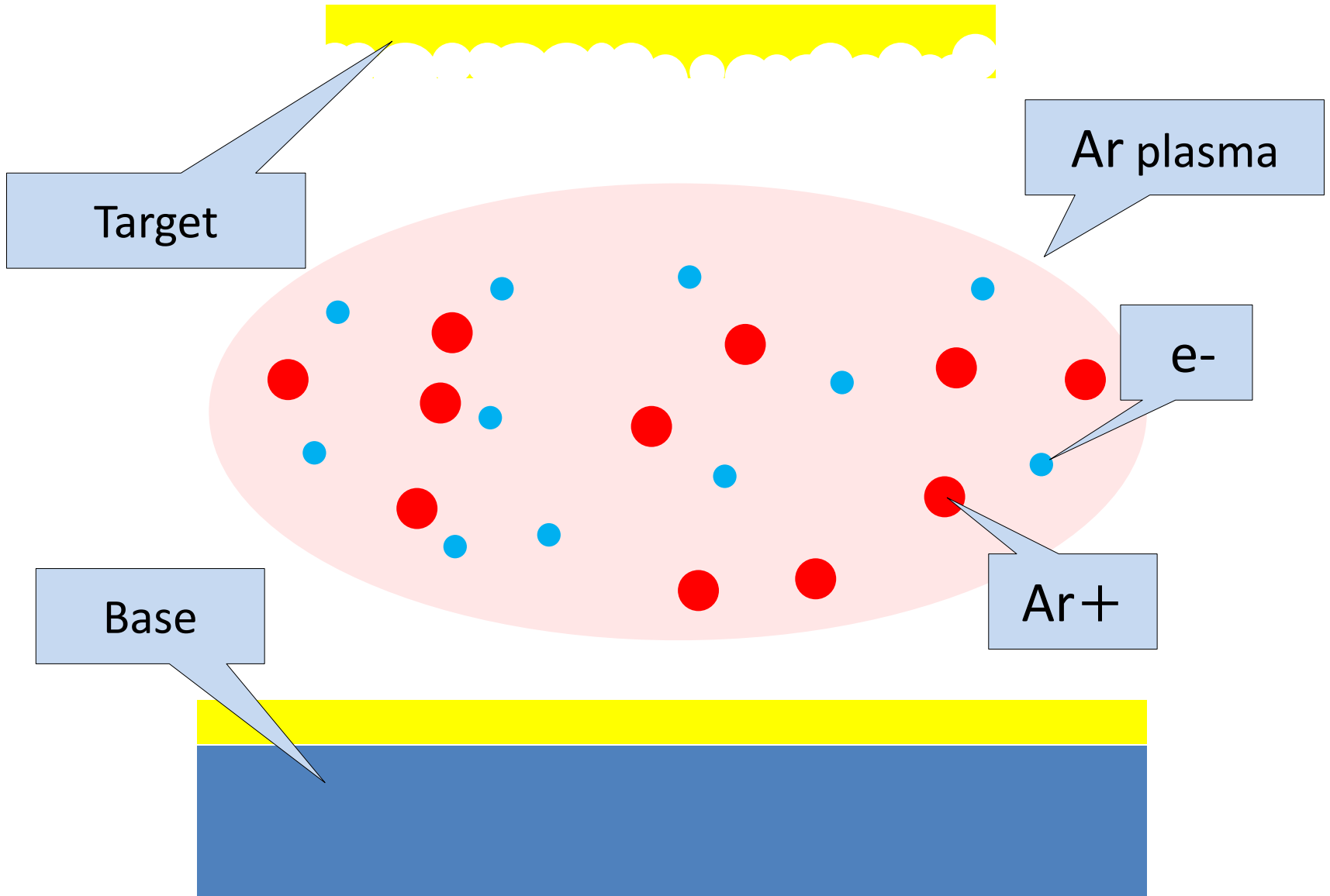
Photon + nano scale = Dressed Photon (DP)

DP + Phonon = Dressed Photon Phonon (DPP)

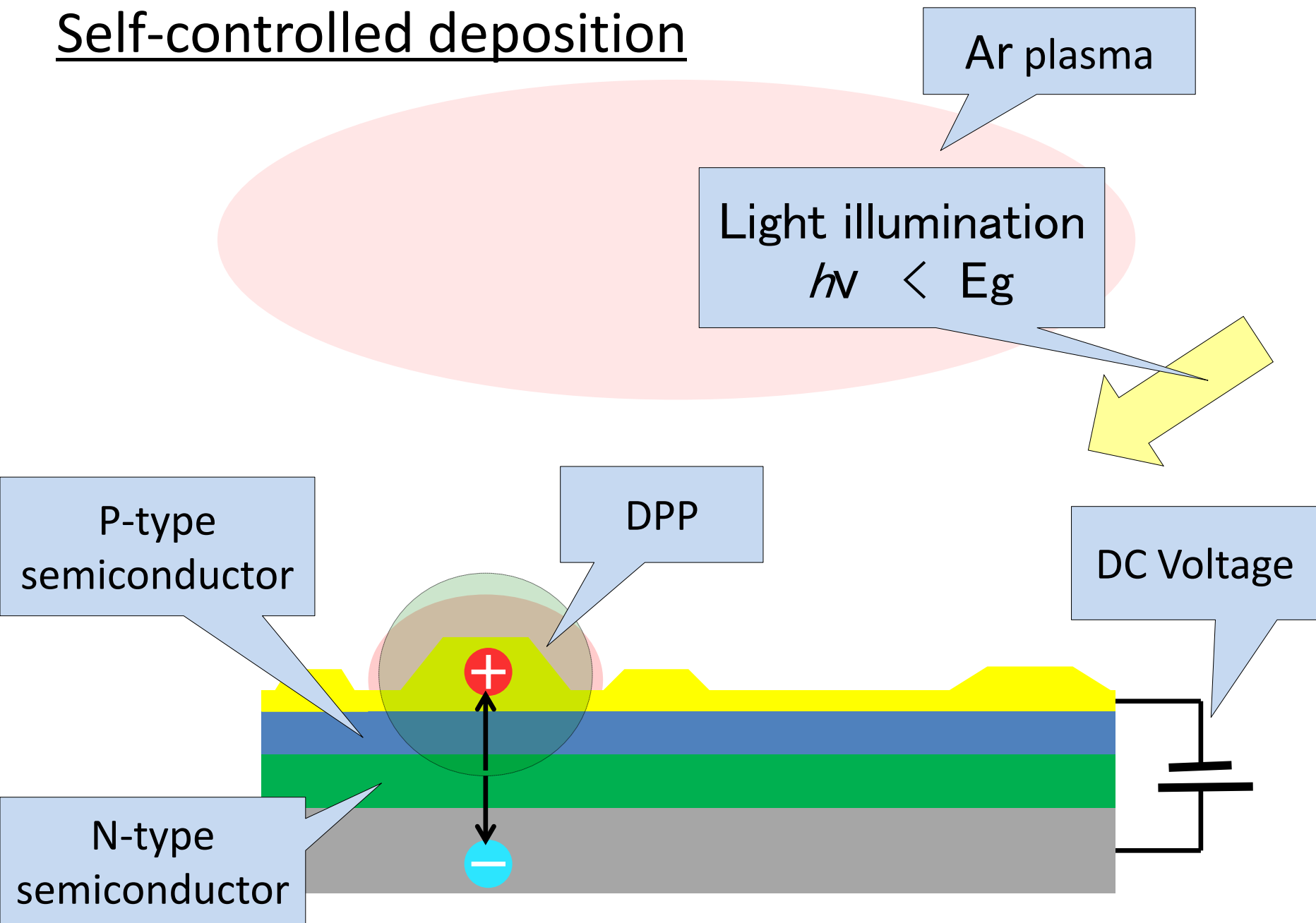
$$\text{Light energy } h\nu < E_{\text{DPP}} \text{ ( Energy of DPP )}$$

Energy become higher !!!

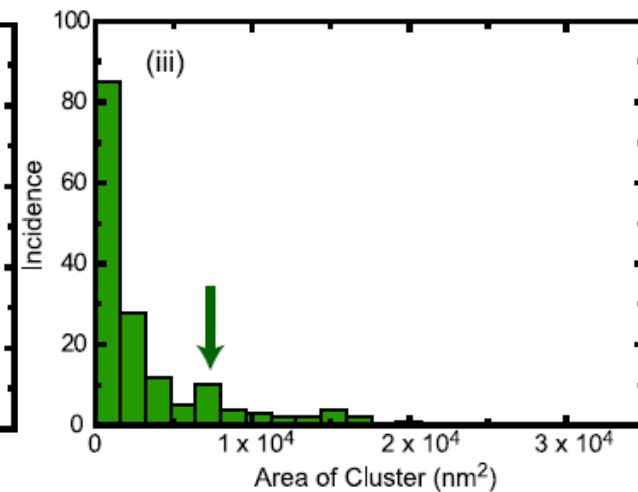
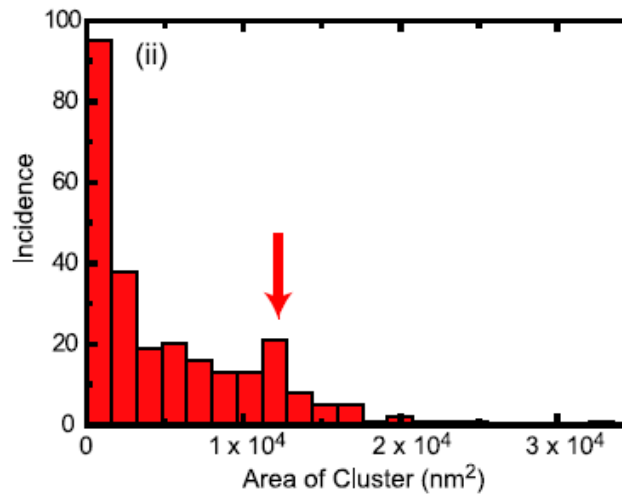
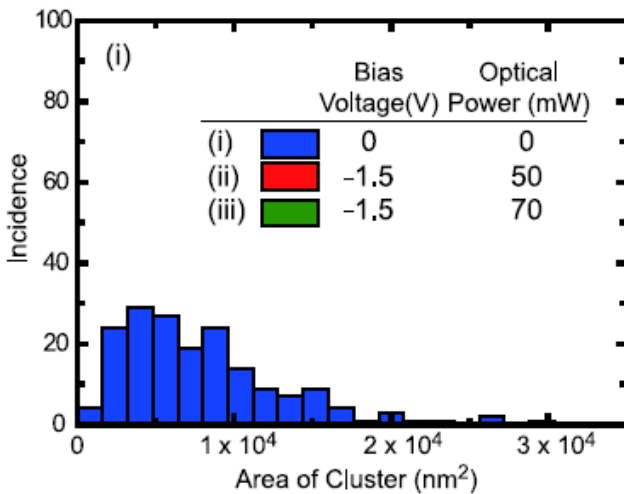
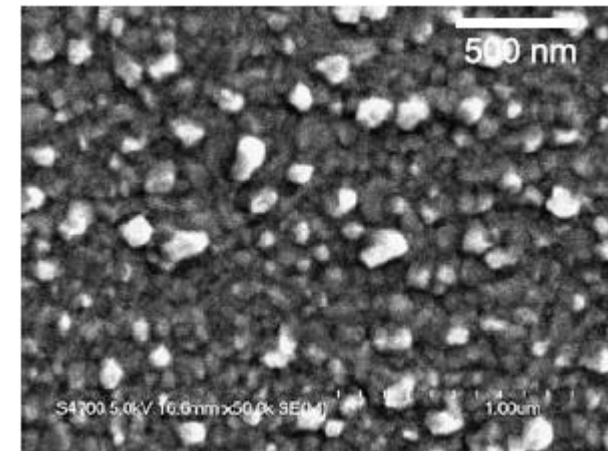
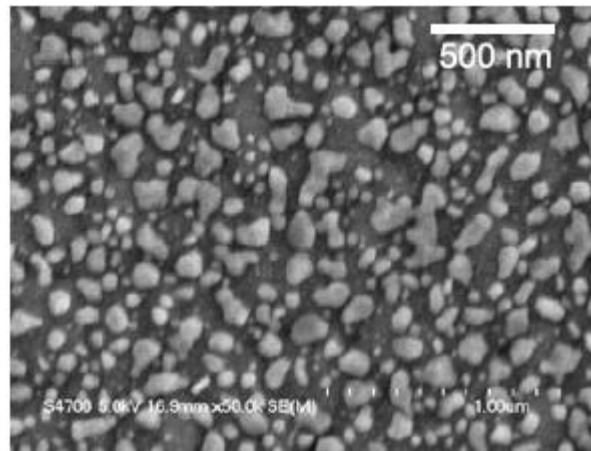
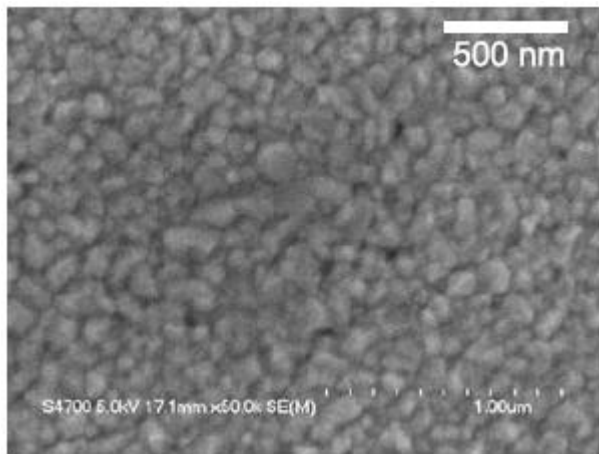
# Sputtering



# Self-controlled deposition

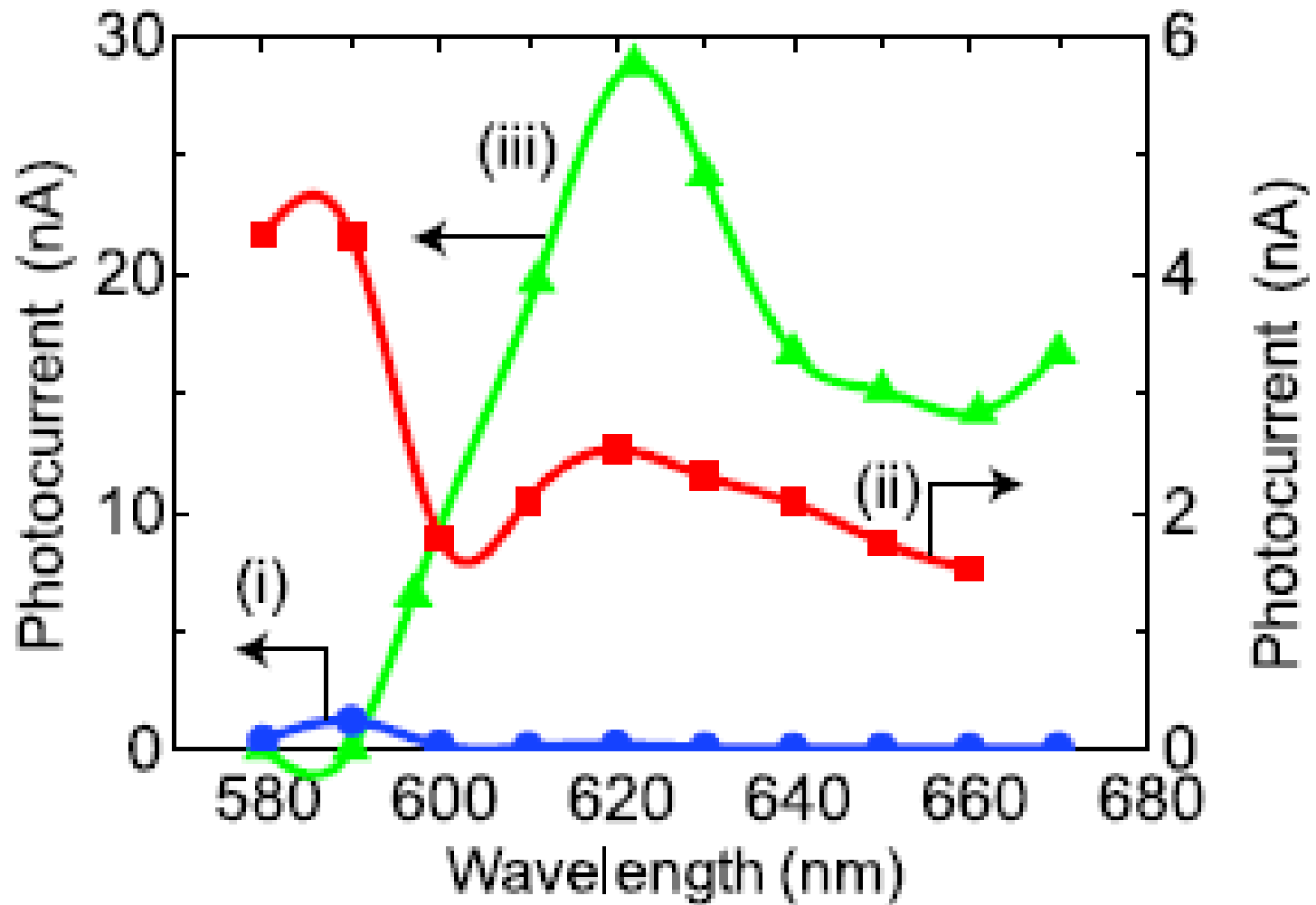


# Experimental Results



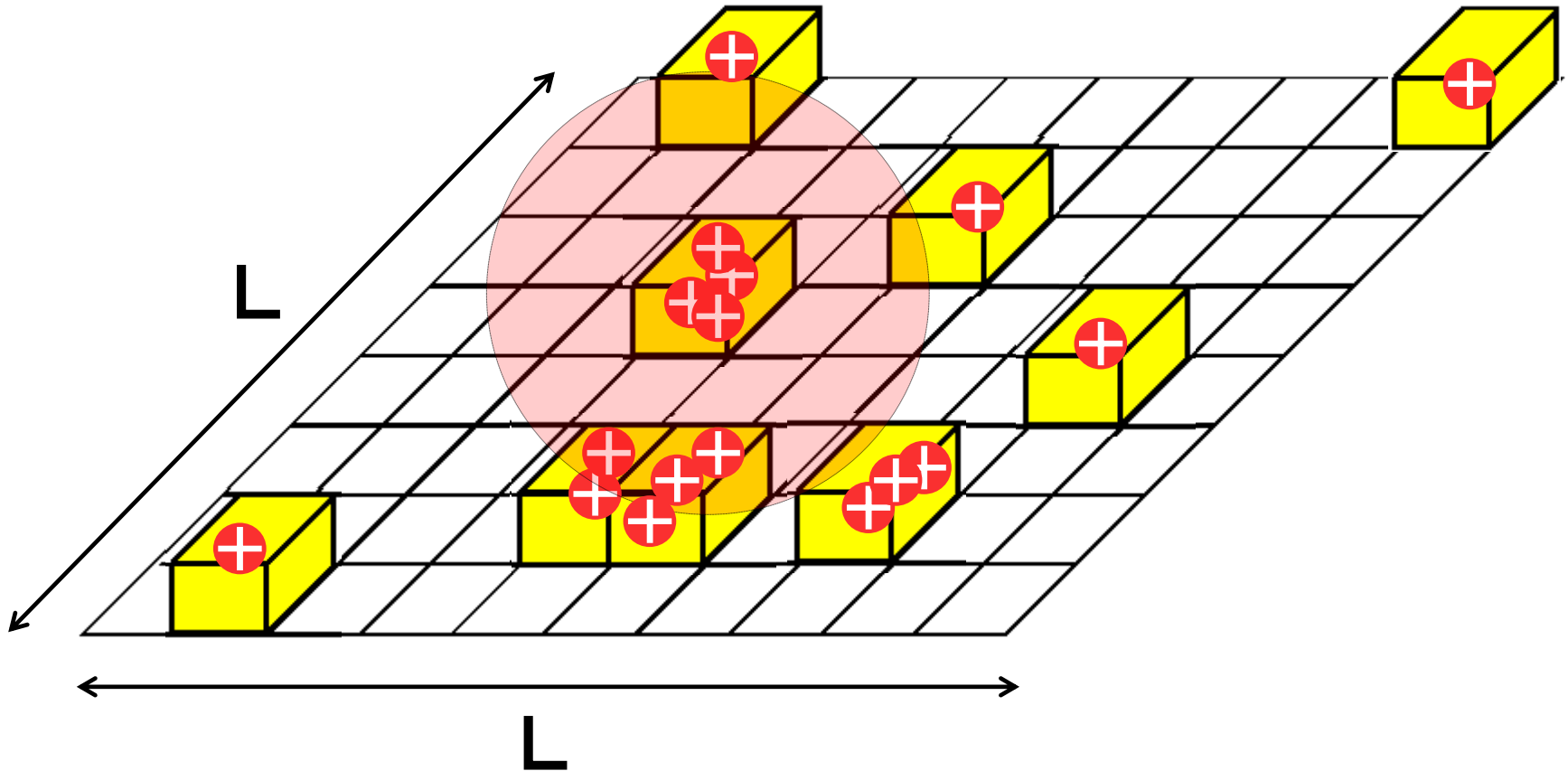
quotation : S.Yukutake , et al , Appl. Phys. B **99** (2010) 415. (U)  
: M.Naruse , et al , Appl. Phys. B **105** (2011) 185. (L)

# Experimental Results





# Model

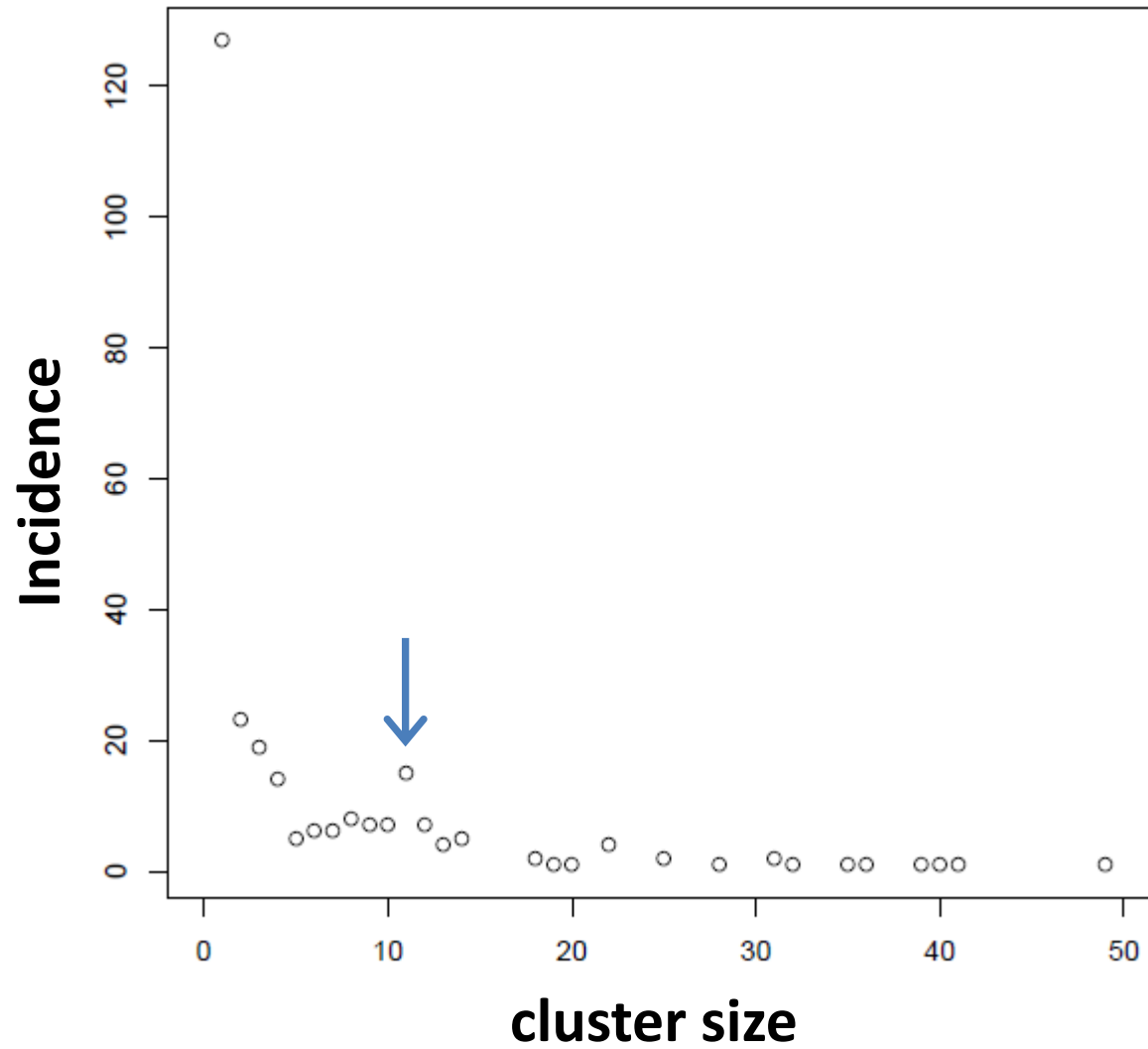


# Simulation Results

surface (64 × 64)

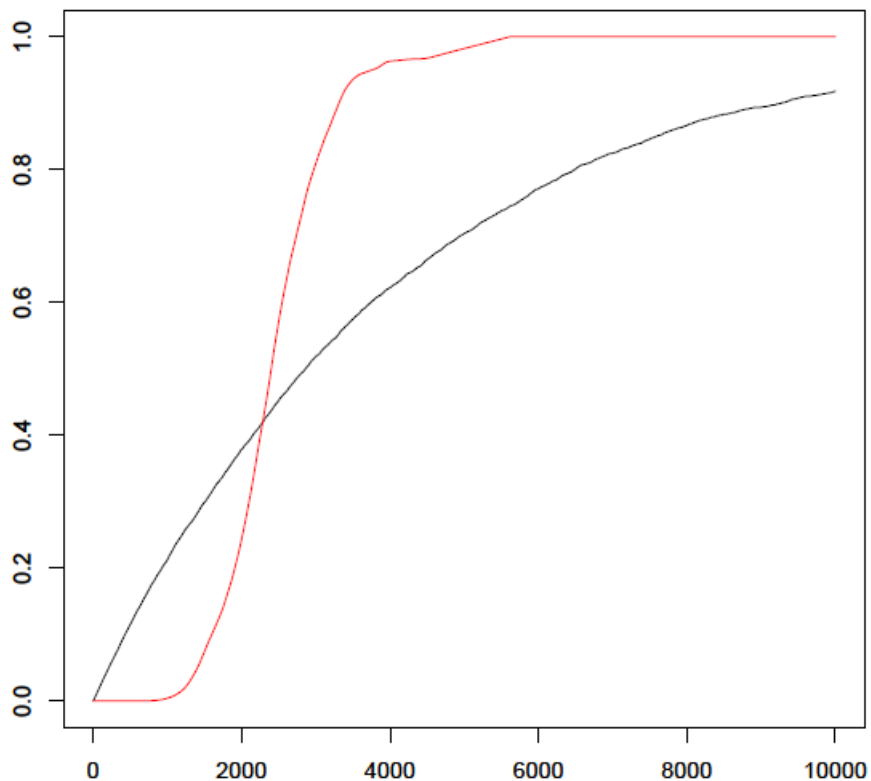


# Simulation Results

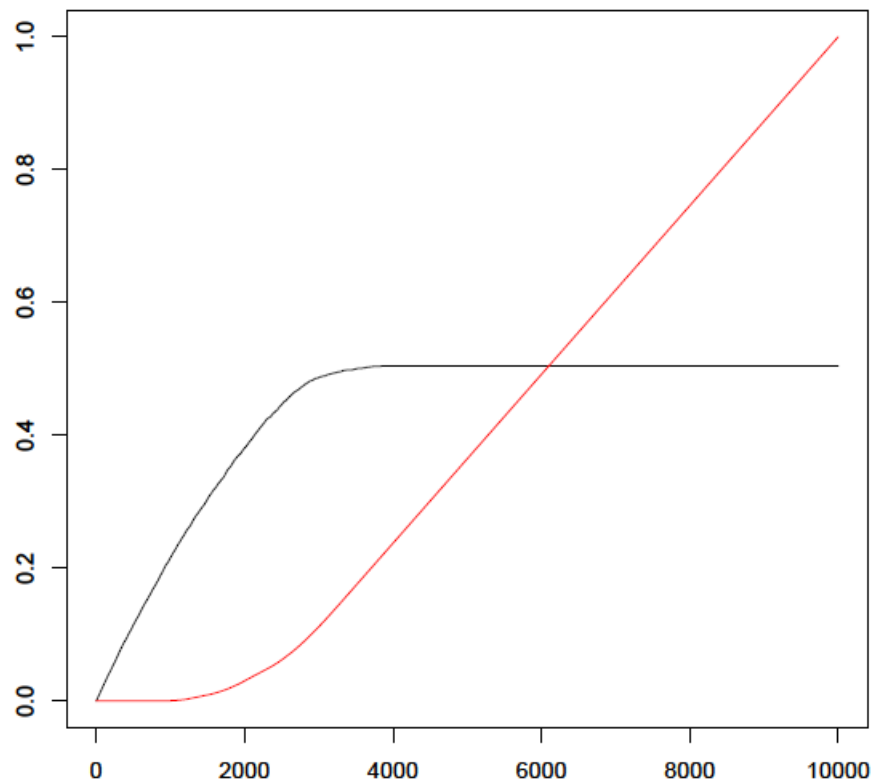


# Simulation Results

low optical power

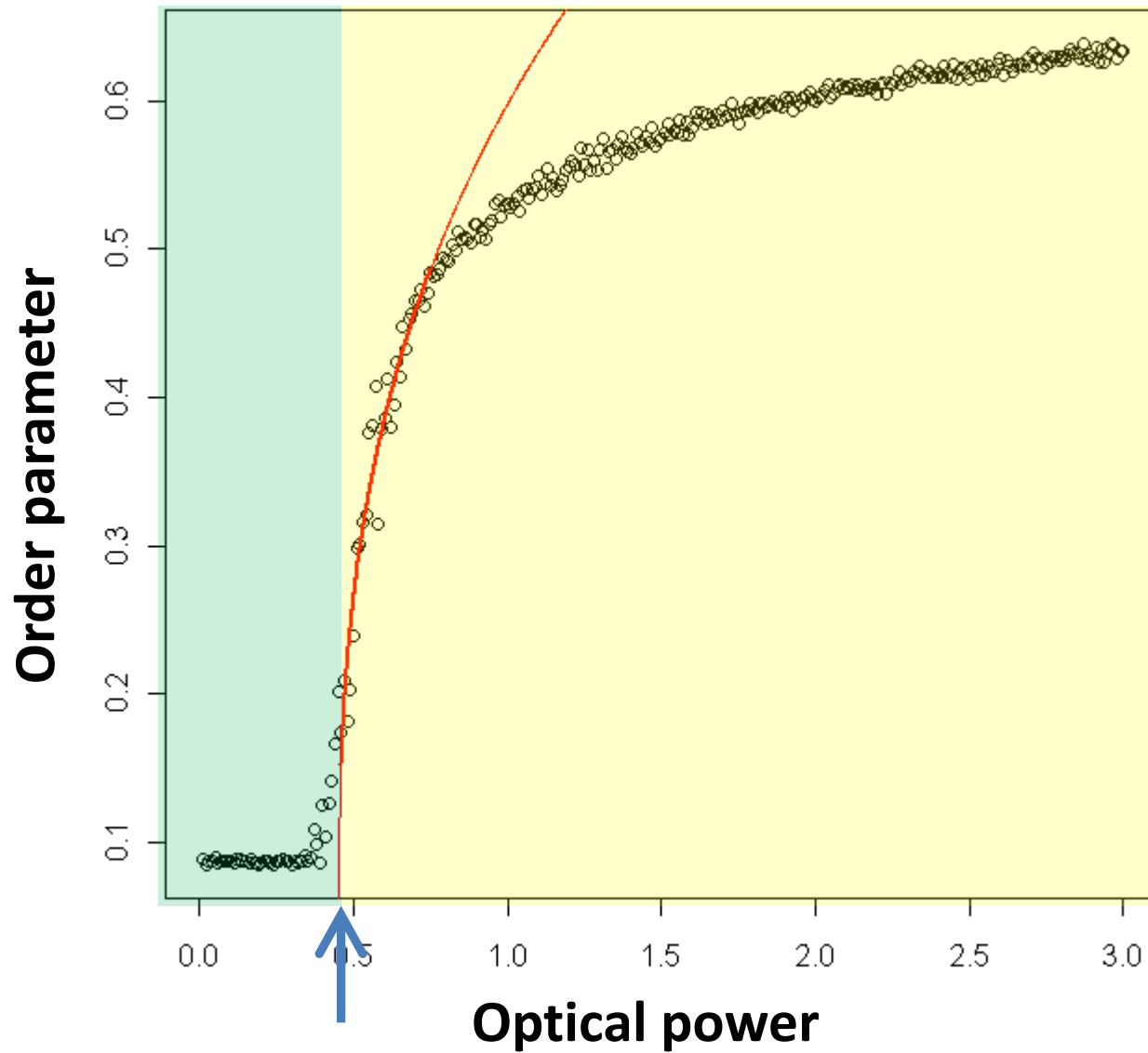


high optical power



- the occupation ratio by deposition
- the normalized total charge

# Simulation Results



Thank you for your attention.