

Building blocks

① 0-D

② 1-D $\Rightarrow$ tubes, wires, fibers

③ 2-D = graphene

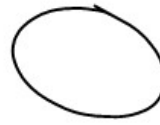
0-D
nanoparticle / $\left\{ \begin{array}{l} \text{cryst.} \\ \text{amorphous} \\ \text{S.C.} \\ \text{cond.} \end{array} \right.$

nanocluster = 1-100 nm

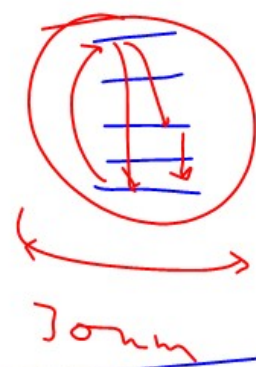
nanopowder =

colloids =

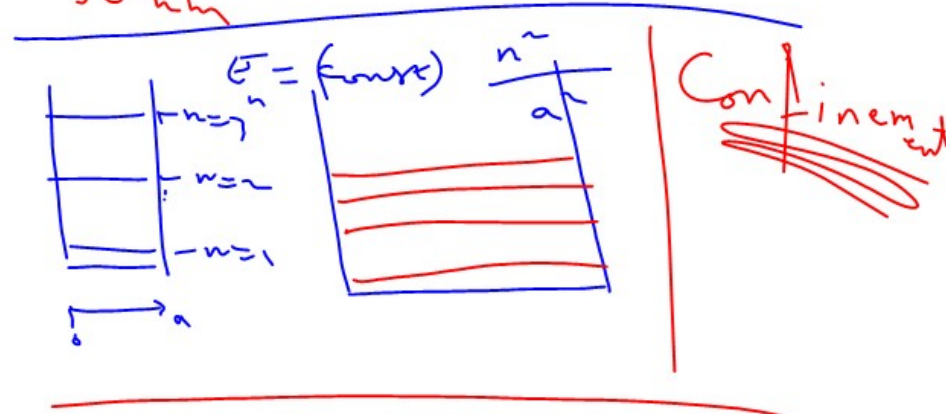
nanocrystals =
1-100 nm



Quantum Dots



In QD we can
control properties
by adding or removing
atoms



D $\equiv$ crystal diameter

$r_B \equiv$ exciton Bohr radius
(e^- , h^+ , energy)



$D \leq 2r_B$ / condition for
confinement
in Q.D.