

# Nitrogen defect in carbon nanotubes

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## Tubes are fun!

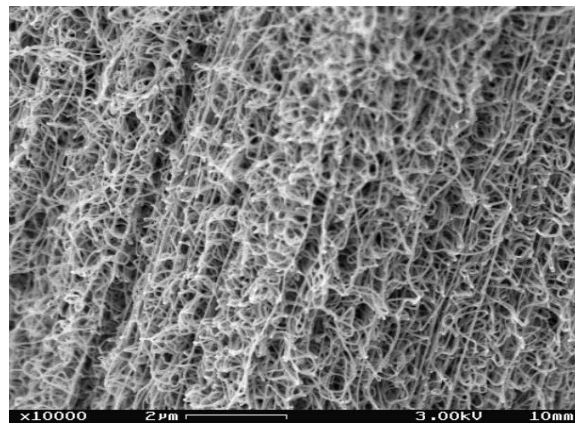
- Rich chemistry (carbon network)
- Single molecule *mechanical* and *electronic* properties
- **Potential** applications: nanotech, materials, electronics etc.



## Why only “potential”?

So far, very few devices

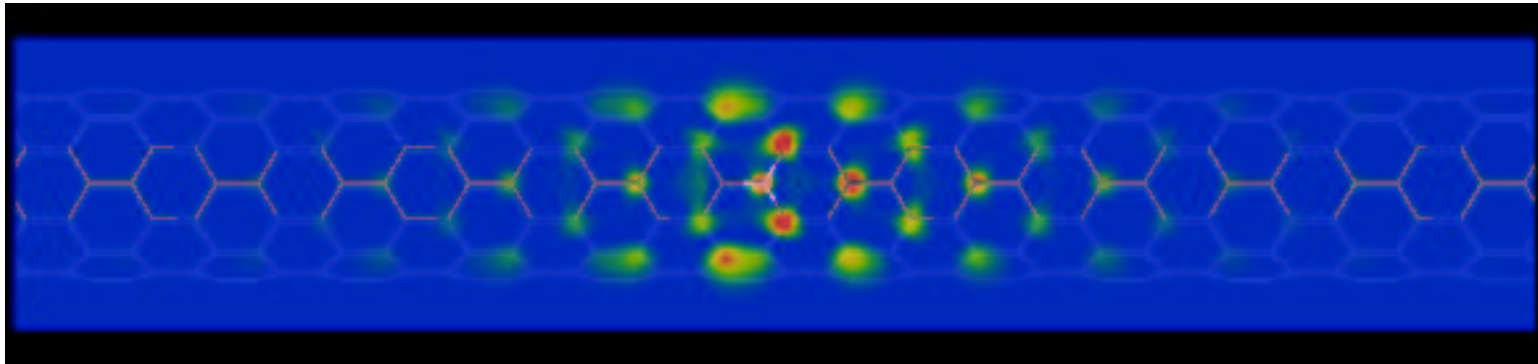
- Fabrication issues: spaghetti of metallic and insulating tubes
- Modifications, tuning



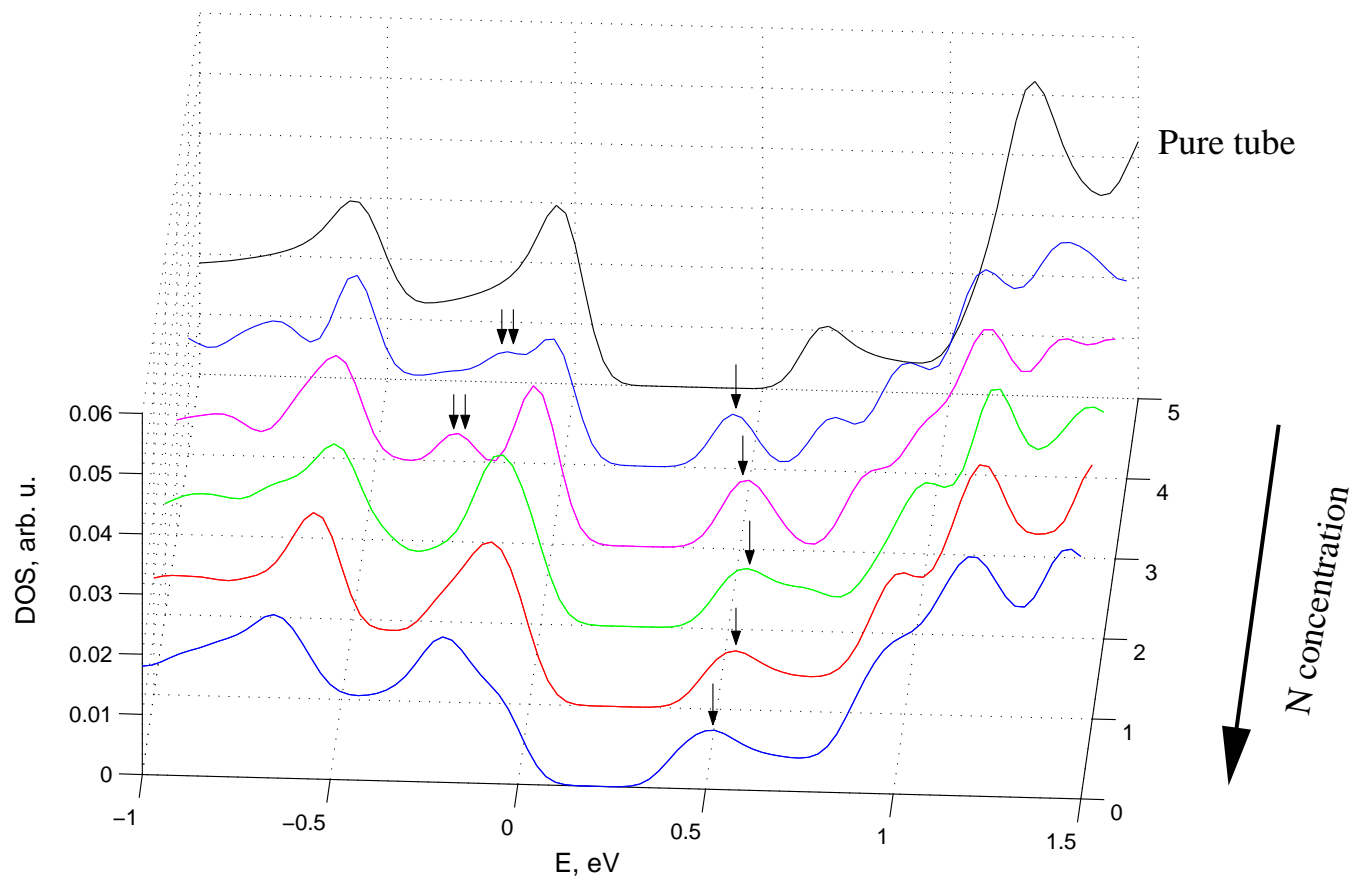
## Nitrogen impurity

Motivation:

- Chemically **active** site
- Changing electronic behaviour



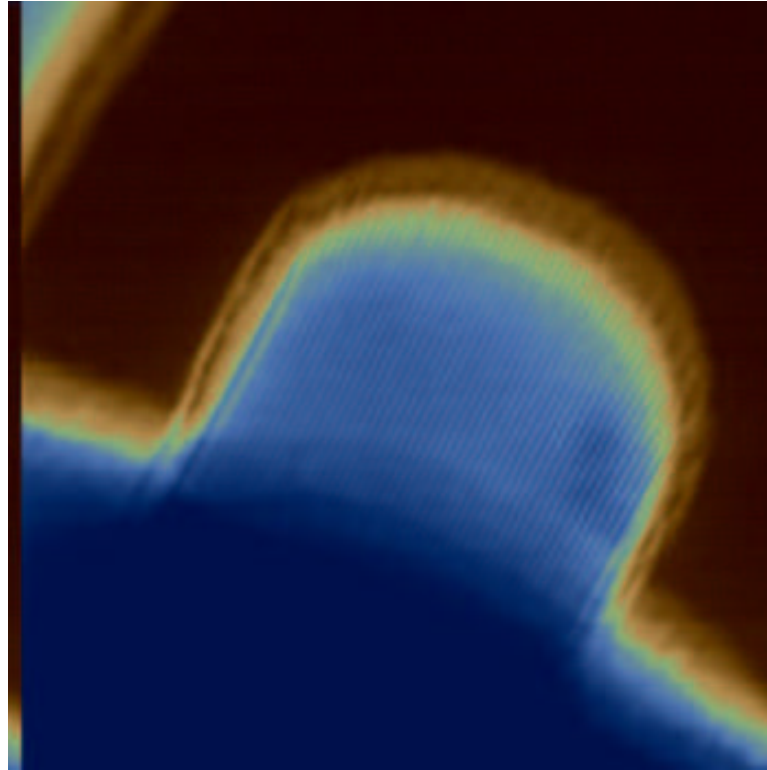
## Density of states



Does it really exist?



N-CNT  
(Brighton)



Nanotube crystal from  $C_{60}/C_{59}N$   
(Cambridge)

We are going to find out!