Computational Geometry in MEMS & Nano Design

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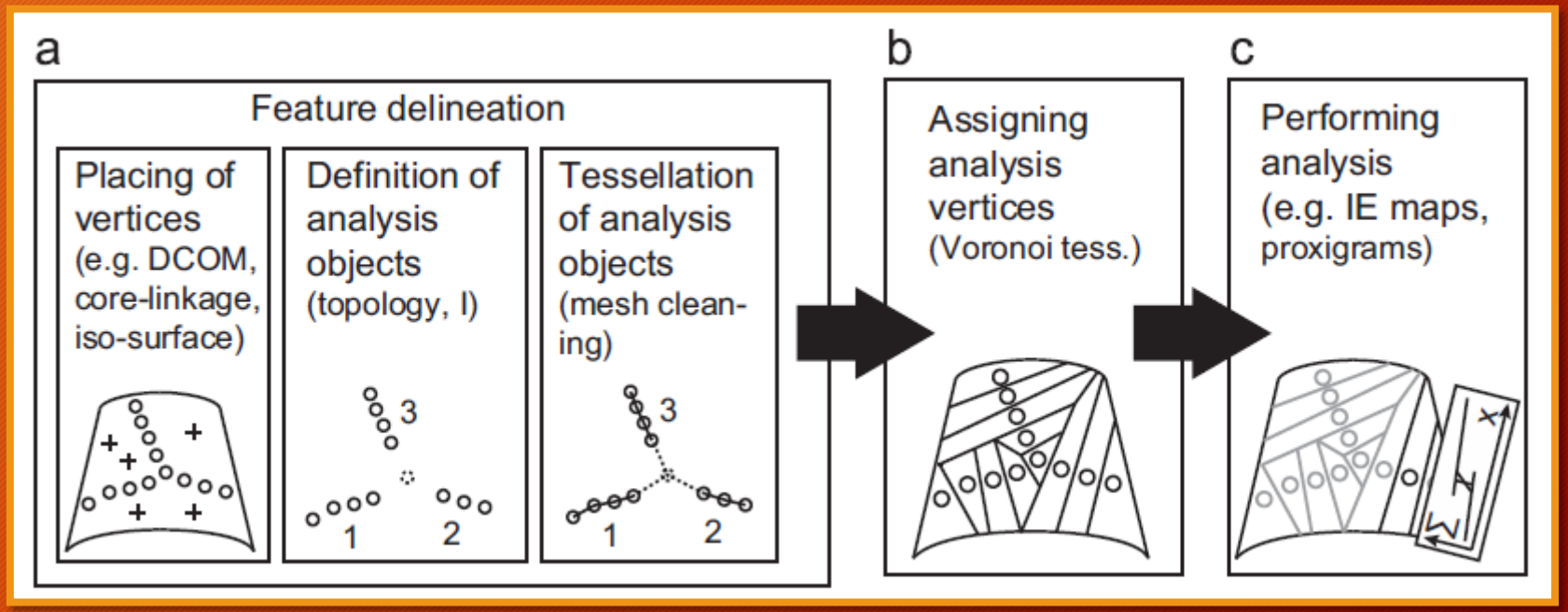
MAE 294

UCLA

Computational Geometry & Computational Analysis

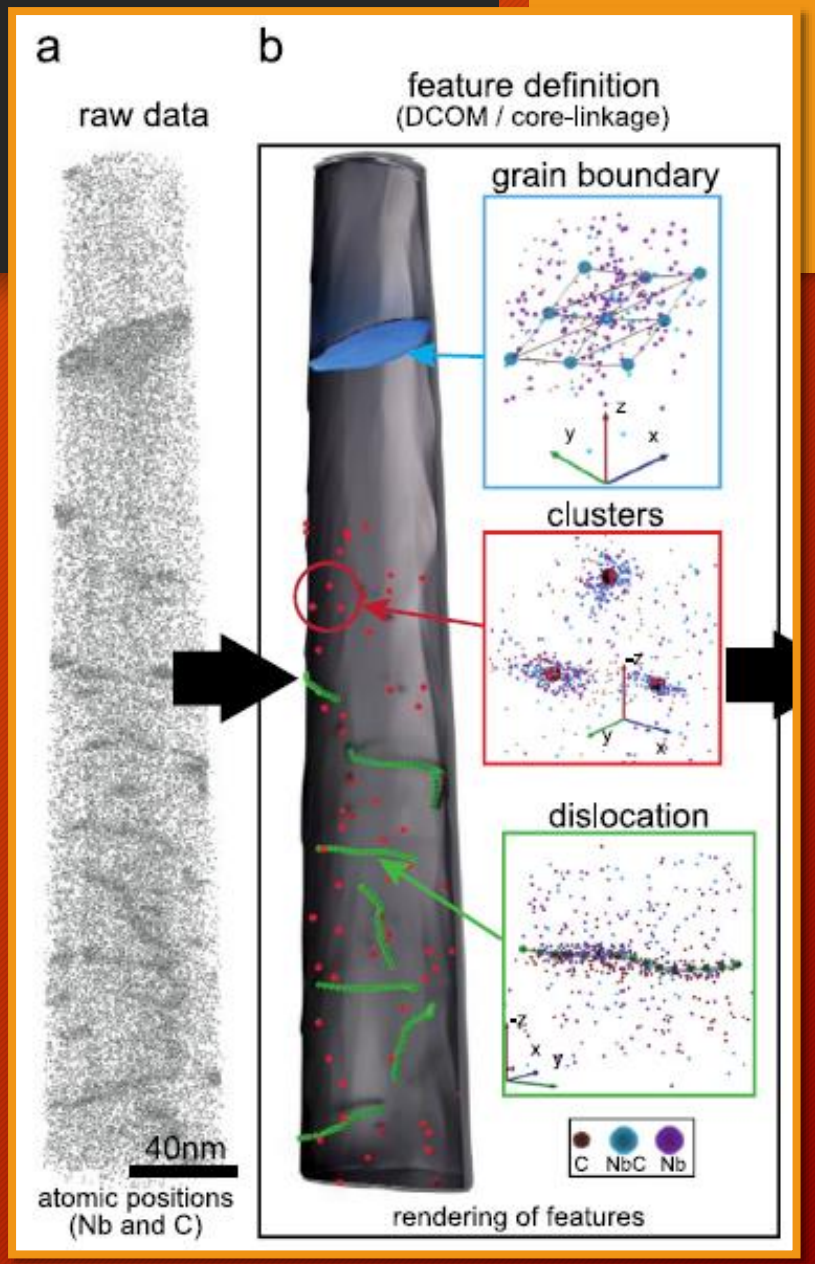
- Computational geometry in MEMS and NANO normally focus on modeling, simulation, and analysis by sorting through collected data



[1]

Atom Probe Tomography

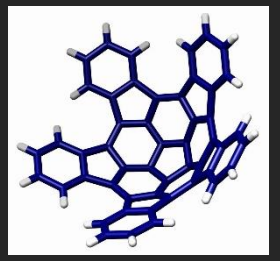
- Atoms imaging captured using atom probe tomography are assigned positions in space through a reconstruction algorithms using computational approaches
- Data store in point cloud along with structural and chemical information
- Computational approaches helps scientist analyze crystallographic structure for:
  - Grain boundaries
  - Dislocation
  - Clusters



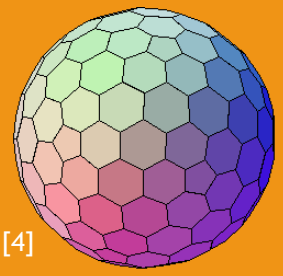
[1]

Geodesic-Arenes (Polyarenes)

[3]

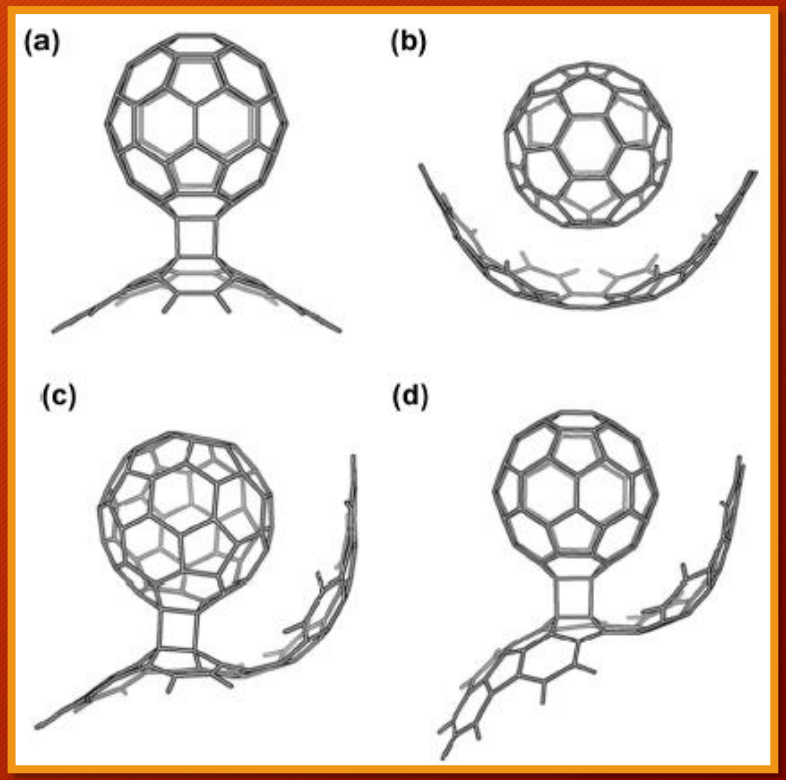


[4]



- Is a polycyclic aromatic hydrocarbon with curved convex or concave surfaces
- Computational geometry is used here to simulate and design these polyarenes
- The curvature of the planar piece change base on relative energy
- both for their unique chemistry and for their technological applications in material science, electronics, and nanotechnology

[2]



References

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