

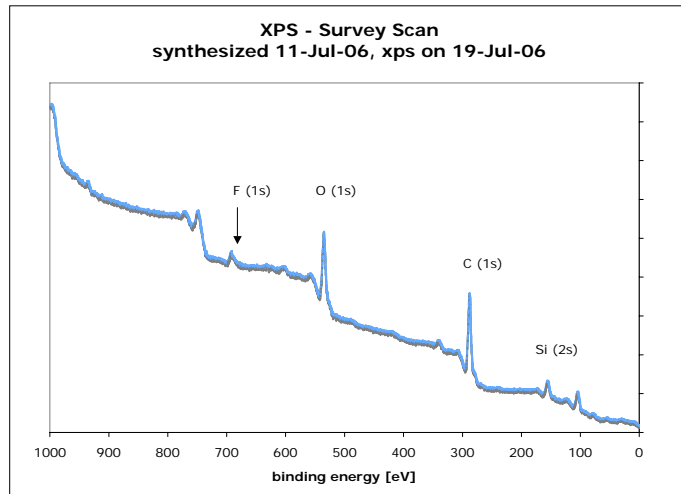
Silicon Quantum Dots for Bioluminescence

Ghidewon Arefe, Brian Darr & Allison Hubel (PI)

Department of Mechanical Engineering, University of Minnesota

- X-ray Photoelectron Spectroscopy (XPS) provides chemical analysis

- ◆ Surface chemistry
- ◆ Contaminate identification
- ◆ Quantify elemental composition
- ◆ Oxidation analysis

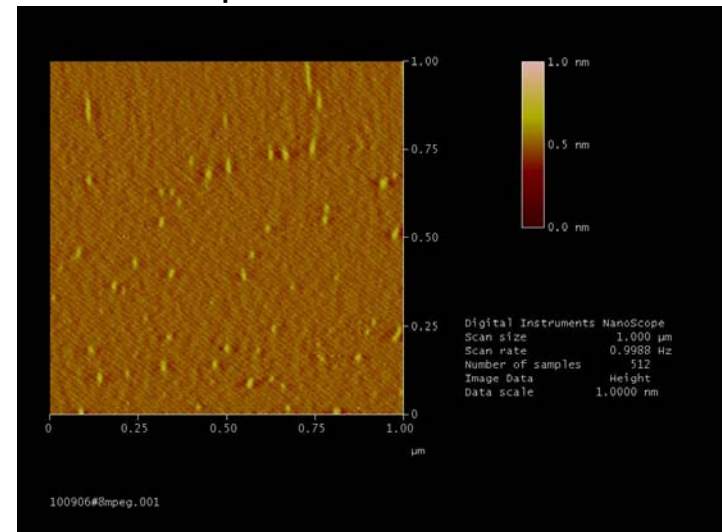


XPS survey scan revealing presence of F, O, C, and Si.

Data acquired using XPS at the Characterization Facility

- Atomic Force Microscopy (AFM) imaging

- ◆ Monodispersity of Si Qdots
- ◆ Size distribution
- ◆ Physical characterization of Si Qdots after surface passivation and encapsulation



AFM image reveals formation of non-agglomerated Si-Qdots
Image acquired using AFM at the Characterization Facility