Christopher J Harris

502 Cinnaminson St Riverton, NJ 08077-1325

Thesis

Milestone

http://cjharris.tk/ cjharris@alumni.rutgers.edu

| Goal | Create new products or improve existing ones, whether the target entity involves materi equipment, software, or humans. | | |
|---------|---|--|--|
| Profile | Chemical Engineer with over 20 years of research in the semiconductor realm seeking to | | |

redefine opportunity in the *industrial sector*:

crystal growth plasma chemistry gene therapy surface science laser excitation applied neuroscience chemical vapor deposition optical characterization computer modeling molecular beam epitaxy electrochemical methods statistical analysis semiconductor devices additive manufacturing process control

Real Time Reflectometry of Ga-based Compound Semiconductor Films on Silicon during Plasma Enhanced Molecular Beam Epitaxy, NCSU Materials Science Dept: 1999.

Clifton Strengths

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|-----------|----------------|--|
| Character | Strategic | faced with any given scenario, can quickly spot the relevant patterns. |
| | Learner | have a great desire to learn and want to continuously improve. |
| | Ideation | able to find connections between seemingly disparate phenomena. |
| | Futuristic | inspired by the future and what could be. |
| | Self-Assurance | possess an inner compass yielding confidence in decision making. |

Invent a new approach for process control to optimize laser power.

Write a Pascal based data acquisition program for DOS environment in 1986, long before LabView enters the Windows market.

Analyze optical signals from a ceramic powder reaction chamber, leading to a computer monitoring scheme, which replaces a human operator.

Construct interferometer to measure film thickness, providing a realtime signal, to calibrate growthrate.

Refine process control loop to stabilize laser power, producing a steady deposition rate with reliable material properties.

Collect in-situ stress measurements of growing films, through deflection of an optical laser, as sample curvature evolves.

Grow the first laser-induced, chemical vapor deposition, amorphous silicon solar cell.

Develop a microwave plasma, chemical vapor deposition system, to create polycrystalline diamond from methane gas, in a regime where kinetics dominates over thermodynamics.

Achieve a unique ellipsoidal plasma advantageous for film growth over spherical plasmas.

Design a radio frequency nitrogen plasma source for GaN film growth.

Monitor the surface evolution of compound semiconductor heterostructure films, in a chemical beam epitaxy system, with plane polarized reflectance spectroscopy.

Derive substrate temperature from plane polarized reflectance intensity.

Apply cyclic voltammetry to find: catalytic activity in gold compounds for methanol oxidation, and electrochemiluminescence in a ruthenium compound for DNA analysis.

Experience Engineering Consultant, Independent (1/18 to present)

Futures Trader, Independent (9/06 to present)

Research Assistant, Maine Chemistry Dept: Orono, ME (8/03 to 5/06) Research Assistant, NCSU Materials Science Dept: Raleigh, NC (1/87 to 5/99)

Research Specialist, MIT Advanced Energy Materials Lab: Cambridge, MA (11/84 to 1/87)

| Education | MS Physical Chemistry | Rutgers: New Brunswick, NJ | Jan 2003 |
|------------------|-------------------------|-----------------------------------|------------|
| | MS Material Science | North Carolina State: Raleigh, NC | unofficial |
| | BS Chemical Engineering | Texas A&M: College Station, TX | May 1984 |
| | HS Diploma | Waltham High: Waltham, MA | Jun 1979 |

Honor Bausch & Lomb Science Award