

Christopher J Harris

502 Cinnaminson St
Riverton, NJ 08077-1325

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

Goal	Return to the <i>industrial sector</i> , to create new products or improve existing ones, whether the target entity involves material, equipment, software, or humans.																	
Profile	<p><i>Chemical Engineer</i> with over 20 years of graduate research in the semiconductor realm seeking to redefine opportunity:</p> <table><tr><td>crystal growth</td><td>plasma chemistry</td><td>gene therapy</td></tr><tr><td>surface science</td><td>laser excitation</td><td>applied neuroscience</td></tr><tr><td>chemical vapor deposition</td><td>optical characterization</td><td>computer modeling</td></tr><tr><td>molecular beam epitaxy</td><td>electrochemical methods</td><td>statistical analysis</td></tr><tr><td>semiconductor devices</td><td>additive manufacturing</td><td>process control</td></tr></table>			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
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Literature	<p><i>Real-time Monitoring of Surface Processes by P-polarized Reflectance</i>, J. of Vacuum Science & Technology: 1997, A15, 807.</p> <p><i>Molecular Layer Epitaxy by Real-time Optical Process Monitoring</i>, Applied Surface Science: 1997, 112, 38.</p> <p><i>Boron Incorporation in Hydrogenated Amorphous Silicon Films Prepared by Chemical Vapor Deposition</i>, J. of Noncrystalline Solids: 1987, 97, 1419.</p> <p><i>Laser-induced Chemical Vapor Deposition of Hydrogenated Amorphous Silicon: Photovoltaic Devices and Material Properties</i>, Solar Cells: 1987, 21, 177.</p>																	
Milestone	<p>Invent a new approach for process control to optimize laser power.</p> <p>Write a Pascal based data acquisition program for DOS environment in 1986, long before LabView enters the Windows market.</p> <p>Analyze optical signals from a ceramic powder reaction chamber, leading to a computer monitoring scheme, which replaces a human operator.</p> <p>Construct interferometer to measure film thickness, providing a realtime signal, to calibrate growthrate.</p> <p>Refine process control loop to stabilize laser power, producing a steady deposition rate with reliable material properties.</p> <p>Collect in-situ stress measurements of growing films, through deflection of an optical laser, as sample curvature evolves.</p> <p>Grow the first laser-induced, chemical vapor deposition, amorphous silicon solar cell.</p> <p>Develop a microwave plasma, chemical vapor deposition system, to create polycrystalline diamond from methane gas, in a regime where kinetics dominates over thermodynamics.</p> <p>Achieve a unique ellipsoidal plasma advantageous for film growth over spherical plasmas.</p> <p>Design a radio frequency nitrogen plasma source for GaN film growth.</p> <p>Monitor the surface evolution of compound semiconductor heterostructure films, in a chemical beam epitaxy system, with plane polarized reflectance spectroscopy.</p> <p>Derive substrate temperature from plane polarized reflectance intensity.</p> <p>Apply cyclic voltammetry to find: catalytic activity in gold compounds for methanol oxidation, and electrochemiluminescence in a ruthenium compound for DNA analysis.</p>																	
Experience	<p><i>Engineering Consultant</i>, Independent (1/18 to present)</p> <p><i>Futures Trader</i>, Independent (9/06 to present)</p> <p><i>Research Assistant</i>, Maine Chemistry Dept: Orono, ME (8/03 to 5/06)</p> <p><i>Research Assistant</i>, NCSU Materials Science Dept: Raleigh, NC (1/87 to 5/99)</p> <p><i>Research Specialist</i>, MIT Advanced Energy Materials Lab: Cambridge, MA (11/84 to 1/87)</p>																	
Education	<p>MS <i>Physical Chemistry</i></p> <p>MS <i>Material Science</i></p> <p>BS <i>Chemical Engineering</i></p> <p>HS <i>Diploma</i></p>	<p>Rutgers: New Brunswick, NJ</p> <p>North Carolina State: Raleigh, NC</p> <p>Texas A&M: College Station, TX</p> <p>Waltham High: Waltham, MA</p>	<p>Jan 2003</p> <p>unofficial</p> <p>May 1984</p> <p>Jun 1979</p>															
Honor	<p><i>Bausch & Lomb Science Award</i></p>																	