EE550 Semester II – 2003-2004
SEMICONDUCTOR SCIENCE & TECHNOLOGY
ASSIGNMENT #2
REVIEW PAPER ALLOCATIONS

PROJECT NUMBER	PROJECT TITLE	STUDENT
1	Epitaxial growth of semiconductors - including vapour phase epitaxy, metal organic chemical vapour deposition, molecular beam epitaxy, liquid phase epitaxy.	
2	Theory of Phonons. .	
3	Calculation methods for energy band, e.g. tight binding methods, LCAO. .	
4	Superconductivity - solid-state fundamentals.	
5	Dislocations - theory and practices for semiconductors.	
6	Scanning probe microscopy - principles and applications: scanning tunnelling microscopy, atomic force microscopy, etc.	
7	Secondary ion mass spectrometry (SIMS) - theory and practice.	
8	Semiconductor assessment utilizing the Rutherford back scattering ion beam technique.	
9	Ellipsometry and Spectroscopic Ellipsometry – theory and applications	
10	Modern IC photolithography: Extreme Ultra-Violet or X-rays?.	
11	Synchrotron X-ray Topography - theory and practice.	
12	Principles of semiconductor laser operation and fabrication.	
13	Electron Microscopy - principles and practice as applied to scanning electron microscopy and transmission electron microscopy.	
14	Blue LEDs and Lasers – SiC, GaN and related materials.	
15	Why use SiGe or Silicon-on-Insulator for high speed electronic applications?	

16	Growing perfect 300 mm and 400 mm diameter Si for IC technology.	
17	Micro-Raman Spectroscopy: Theory and applications in the semiconductor IC industry.	
18	The principles and practice of Electron Beam Induced Current and Cathodoluminescence techniques.	
19	SiC – a useful material for high power electronics?	
20	Organic Semiconductors – a flexible choice?	
21	IC Interconnect Technology: Choices for Low Resistance & Low-K Dielectrics	
22	Advances in high dielectric constant materials for MOSFET gates.	
23	Nanotubules – a potential solution to future IC interconnect technology.	
24	Magnetic memory technology for future advanced memory devices.	
25	Monitoring of plasma processing in IC fabrication.	
26	Spintronics.	
27	Photonic bandgap materials.	
28	Reliability of semiconductor lasers – what causes failure?	
29	GaN ultra-violet lasers – principles, fabrication and applications.	

Your allocations are final, i.e. no reallocation to another topic will be allowed.

Many thanks,
Patrick McNally (Date)