Exhibit A

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

ELM 3DS INNOVATIONS, LLC, Plaintiff, v. SAMSUNG ELECTRONICS CO., LTD., et al., Defendants.	C.A. No. 14-cv-1430-LPS-CJB JURY TRIAL DEMANDED
ELM 3DS INNOVATIONS, LLC, Plaintiff, v. MICRON TECHNOLOGY, INC., et al., Defendants.	C.A. No. 14-cv-1431-LPS-CJB JURY TRIAL DEMANDED
ELM 3DS INNOVATIONS, LLC, Plaintiff, v. SK HYNIX INC., et al., Defendants.	C.A. No. 14-cv-1432-LPS-CJB JURY TRIAL DEMANDED

DECLARATION OF SHEFFORD BAKER

My name is Shefford P. Baker. I am an Associate Professor in the Department of Materials Science and Engineering at Cornell University. I received my undergraduate degree in Music from the University of New Mexico before earning my M.S. and PhD (1992) in Materials Science and Engineering at Stanford University. My PhD work focuses on stresses and mechanical properties of thin metal/metal multilayer films. I also developed methods for measuring mechanical properties of thin films using nanoindentation.

Following Stanford, I worked at the Max-Planck-Institut für Metallforschung in Stuttgart Germany for five years as a member of the research staff. I supervised PhD students and conducted research. My work there focused on projects related to thin film metallizations for use in integrated circuits. In one project, I studied electromigration phenomena and developed an experiment to relate conductor line microstructure to electromigration failure and correlated failure characteristics to line texture. In several projects, we investigated stresses and thermomechanical behavior of thin copper metallizations. The semiconductor industry was gearing up to transition to copper metallizations and did not know much about it. I supervised the design and construction of two ultra-high vacuum sputter deposition systems and a substrate curvature stress measurement system. My students and I also conducted thin film stress measurements using x-ray diffraction and mechanical property measurements using nanoindentation.

I joined the faculty at Cornell in 1998 in the Department of Material Science and Engineering (MSE). During my twenty years at Cornell, my research has focused on structure and mechanical properties in a range of materials including metal and ceramic thin films, biomineralized tissues and biogenic, geologic, and synthetic mineral crystals, silicate glasses, metallic glasses, and a number of other materials.

My research group at Cornell develops sophisticated machinery and equipment to produce and study thin films. For example, in our thin film lab, we have built (and rebuilt) a high vacuum ($\approx 10^{-7}$ Torr) evaporator system with thermal and e-beam sources, complete source and substrate shuttering, a heated and cooled sample stage and an ion gun for ion beam assisted deposition. We also designed and built an ultra-high vacuum sputter deposition system ($< 10^{-9}$ Torr) with three confocal sputter guns, a rotating heated (500˚C) sample stage, RF and DC power supplies, substrate bias. This system includes a substrate curvature stress measurement system that can detect a radius of curvature to about 60 km on a 100 mm substrate (very high stress resolution) at temperatures from liquid nitrogen to over 800˚C. In addition, we outfitted the G-2 beamline at the Cornell High Energy Synchrotron Source (CHESS), designing and building a 6-circle kappa geometry goniometer, a heated environmentally controlled stage, and other features dedicated to thin film structure and stress measurements. My group has used this machinery to study electromigration and adhesion in thin copper films, texture and texture transformations in a variety of FCC metals films (primarily silver), phase formation, phase transformation and texture patterning in thin tantalum films, stresses in thin tungsten films, and many others. We also have a nanomechanics lab that has included several nanoindenters, an AFM and several homemade fracture and adhesion test setups. We also operate the MSE department's tensile tester where we have conducted tests on the mechanical properties of a number of samples from brazed lap joints for stainless steel heat exchangers to grafted joints in wine grape plants. Our development of and access to this equipment allows us to conduct a broad range of experiments. In particular our thin film lab allows us to produce extremely pure and clean films for model studies.

I have published extensively in the area of thin films and semiconductors. My publications have examined issues relating to stress, creep, strain hardening, structure, texture and texture transformations, phase formation and phase transformations, and many other features in thin films. A full list of my publications is attached as Exhibit A.

Much of the thin film work was motivated by the needs of the semiconductor manufacturing industry. Starting in Germany my students and I worked to understand the mechanical properties of the copper metallizations that were eventually adopted by the industry. For example, we studied the effect of tantalum barrier layers on structure and properties of copper films and worked out the relationship between interfacial oxygen concentration and adhesion between Cu films and adjacent SiO_2 layers. In another project, we studied tantalum films that were used as thin film resistors and that are now under development for Giant Spin Hall Effect devices.

During my time at Cornell, I have received several awards, including Excellence in Teaching Awards and the CAREER Award from the National Science Foundation. In addition to my research and teaching, I have been involved in developing the engineering curriculum for undergraduates, serving as the Director of Undergraduate Studies for the Department of Materials

Science and Engineering for several years. I am currently the Director of the Master of Engineering program in MSE, a program that I and several colleagues created 4 years ago to prepare MSE students for careers in industry. I am also a member of the Fields of Theoretical and Applied Mechanics, Mechanical Engineering, and Aerospace Engineering at Cornell.

Outside of Cornell, I have held many roles in the Materials Research Society, which is an international organization that promotes interdisciplinary materials research among professionals worldwide. I was the president of that organization in 2009 and am now the chair of the Publications Committee. I was also involved in the formation of the Nanoscale Informal Science Education network. The NISE is funded by the National Science Foundation and promotes public education of science (including nanoscale science) in the United States. I am also currently a member of the American Ceramics Society and TMS.

I. ASSIGNMENT, LEGAL STANDARDS, AND MATERIALS CONSIDERED

I have been asked to provide opinions about the reports offered by the experts retained by the defendants in this matter, Drs. Steven Murray and Richard B. Fair.

I understand from Elm's counsel that the terms of a patent should have their plain and ordinary meaning in the field of the invention as understood by a person having ordinary skill in the art. I also understand that the defendants argue that certain claims are indefinite. I understand that a claim is indefinite when it does not point out and distinctly claim the subject matter of the invention, which means that the claims fail to inform a person of skill in the art, with reasonable certainty, about the scope of the invention. I have conducted both inquiries as of the date of the patent, which is April 1997.

Given that understanding, my analysis has focused on how a person of skill in the art would have understood the claims and the other sections of the patent given my background with semiconductor technology and thin films, which include dielectrics. I have also focused on the

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