UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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FINISAR CORPORATION
Petitioner

v.

THOMAS SWAN & CO. LTD.
Patent Owner

_____

Inter Partes Review Case No. IPR2014-00461
Patent 7,664,395

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CORRECTED PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 7,664,395 UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. §§ 42.1-.80, 42.100-.123

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I.   INTRODUCTION

Petitioner Finisar Corporation ("Finisar") requests *inter partes* review of all claims of U.S. Patent No. 7,664,395 ("the '395 patent") (Ex. 1001), assigned on its face to Thomas Swan & Co. Ltd. ("Thomas Swan"). The claims of the '395 patent are generally directed to "optical routing modules" that use a "dispersion device" to disperse light beams of different frequencies in different directions onto a "Spatial Light Modulator (SLM) having a two dimensional array of pixels." The routing module includes circuitry that displays "holograms" on the SLM in order to route the different frequencies (channels) to particular output ports of the module. The technology claimed in the '395 patent has applications in fiber optic communications. The original patent application that led to the issuance of the '395 patent was filed in the United Kingdom on September 3, 2001.

As explained further below, the named inventor on the '395 patent, Melanie J. Holmes, improperly claimed as her own subject matter that was previously developed and published by her former colleagues at the University of Cambridge ("Cambridge"). For about a decade prior to the filing of the priority application in 2001, students and researchers at Cambridge, working in Professor William Crossland's Photonics & Sensors group, had investigated and published research relating to the use of liquid crystal SLMs for performing all kinds of optical functions for use in optical communication and other applications. This work is well

documented and described in numerous publications emanating from Dr. Crossland's

group in the 1990s. See Ex. 1014, http://www-g.eng.cam.ac.uk/photonics_sensors/

people/bill-crossland.htm (biography of Prof. Crossland: "Bill Crossland held the

position of Group Leader of the Photonics & Sensors Group . . . from 1992 . . . until his

retirement at the end of September 2009. . . He is generally regarded as the founding father

of liquid crystal over silicon (LCOS) technologies.") and Ex. 1015, http://www-

g.eng.cam.ac.uk/photonics_sensors/publications/index.htm (providing an exemplary

listing of publications from the Photonics & Sensors group).

In the years prior to the filing of the U.K. priority application, Dr. Holmes

collaborated with Cambridge on the development and use of liquid crystal SLMs for

optical beam routing and other applications. The collaboration began in at least 1995

(Ex. 1010) (article entitled "Low Crosstalk Devices for Wavelength-Routed

Networks," by M. J. Holmes, W. Crossland *et al*., IEE Colloquium on Guided Wave

Optical Signal Processing, IEE Dig. No. 95-128 London, UK) and continued through at

least 2001 (Ex. 1011) [article entitled "Holographic Optical Switching: The

'ROSES' Demonstrator," by W. A. Crossland, K.L. Tan, M.J. Holmes et al., Journal

of Lightwave Technlogy, Vol. 18, No. 12, Dec. 2000, at 1845-54]. During this time,

there were three particular students that worked in Prof. Crossland's group that are

relevant to this petition: Michael C. Parker, Stephen T. Warr and Kim L. Tan. Each

of these students conducted research relating to liquid crystal SLMs for use in optical

routing that culminated in Ph.D. dissertations published by Cambridge. These three

Ph.D. dissertations form the basis of this petition along with a United States patent

application filed by Prof. Crossland, each of which are prior art under either § 102(b)

or § 102(e).

As explained further below, it is apparent that Dr. Holmes claimed as her own

the work of Drs. Parker, Warr and Tan and Prof. Crossland after learning about their

research through her collaboration with Cambridge. A review of the publication

history of the Cambridge group preceding Dr. Holmes's U.K. priority application

makes clear that the researchers in the group worked closely together—sometimes

even in the same laboratory using the same devices—and openly shared their ideas

with each other. In addition, these researchers frequently cite each other's work in

their publications. Thus, by the time of Dr. Holmes filed her U.K. priority

application, a person having ordinary skill in the art ("PHOSITA") would have

understood that the inventions claimed in the '395 patent were rendered obvious by

the prior work of others at Cambridge. Given the working environment at

Cambridge and the long history of cross-cited publications, a PHOSITA would have

been strongly motivated to combine the Cambridge publications relied upon in this

petition.

This petition shows that there is a reasonable likelihood that Petitioners will

prevail on all claims based on the three Cambridge Ph.D. dissertations discussed

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