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Massachusetts Institute of Technology	Internal Address: Office of the General Counsel
Additional name(s) of conveying party(ies) attached? Yes No	Suite 1265
3. Nature of conveyance:	
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If this document is being filed together with a new application, the execution date of the application is:	
A. Patent Application No.(s) 09/253,379	B. Patent No.(s)
Additional numbers attached? Yes No	
5. Name and address of party to whom correspondence concerning document should be mailed:	6. Total number of applications and patents involved:
Name: Robin Clay Fritsch	7. Total fee (37 CFR 3.41)\$ 0.00
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Washington, D.C. 20231

LICENSE TO THE UNITED STATES GOVERNMENT

WHEREAS, John Joannopoulos, et al has invented "Omnidirectional Reflection from a One-Dimensional Photonic Crystal" and filed a patent application thereon in the United States, entitled "High Omnidirectional Reflector" and bearing Serial Number 09/253,379 and filing date February 19, 1999; and

WHEREAS, invention was made in the course of research supported by the National Science Foundation under N.S.F. Grant 9400334-DMR; and

WHEREAS, the United States Government is entitled to certain rights in and to said invention and application by reason of the terms relating to such support; and

WHEREAS, the Massachusetts Institute of Technology, hereinafter called the "Licensor" has acquired by assignment from the inventors the entire right, title and interest of the inventors to such invention;

NOW, THEREFORE:

- 1. The Licensor, in consideration of the premised and other good and valuable consideration, hereby grants and conveys to the United States Government a non-exclusive, non-transferable, paid-up license to make, use and sell the invention throughout the world by or on behalf of the Government of the United States and states and domestic municipal governments under the aforesaid patent application and any and all divisions or continuations, and in any and all patents or reissues which may be granted thereon during the full term or terms thereof.
- 2. The Licensor covenants and warrants that he has the right to grant the foregoing license, and that any assignment or license which he may make of the invention or the said patent application or patents thereon, shall expressly be make subject to this license.
- 3. The Licensor agrees that the Government shall not be estopped at any time to contest the enforceability, validity, scope of or title to any patent or patent application herein licensed.
- 4. This License shall not limit the rights reserved to the Government under the contract(s), grant(s), or other arrangement(s) under which said invention was made.

Signed this 3 day of May, 1999.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Jarmila Z/H/rbek

Patent Administrator/Office Manager

Accepted for the benefit of the Government this

RECORDED: 07/12/2002

Patent Paralegal

PATENT REEL: 013075 FRAME: 0640