



RENIECYT - LATINDEX - Research Gate - DULCINEA - CLASE - Sudoc - HISPANA - SHERPA UNIVERSIA - E-Revistas - Google Scholar
DOI - REDIB - Mendeley - DIALNET - ROAD - ORCID

Title: Thin-films microstructuration through photolithography

Authors: ALVARADO-LOPEZ, Joel Isaac I, INCLAN-LADINO, Adriana, LOPEZ-VILLEGAS, Rubén y
TELLEZ-LIMON, Ricardo

Editorial label ECORFAN: 607-8695
BCIERMMI Control Number: 2019-044
BCIERMMI Classification (2019): 241019-044

Pages: 11
RNA: 03-2010-032610115700-14

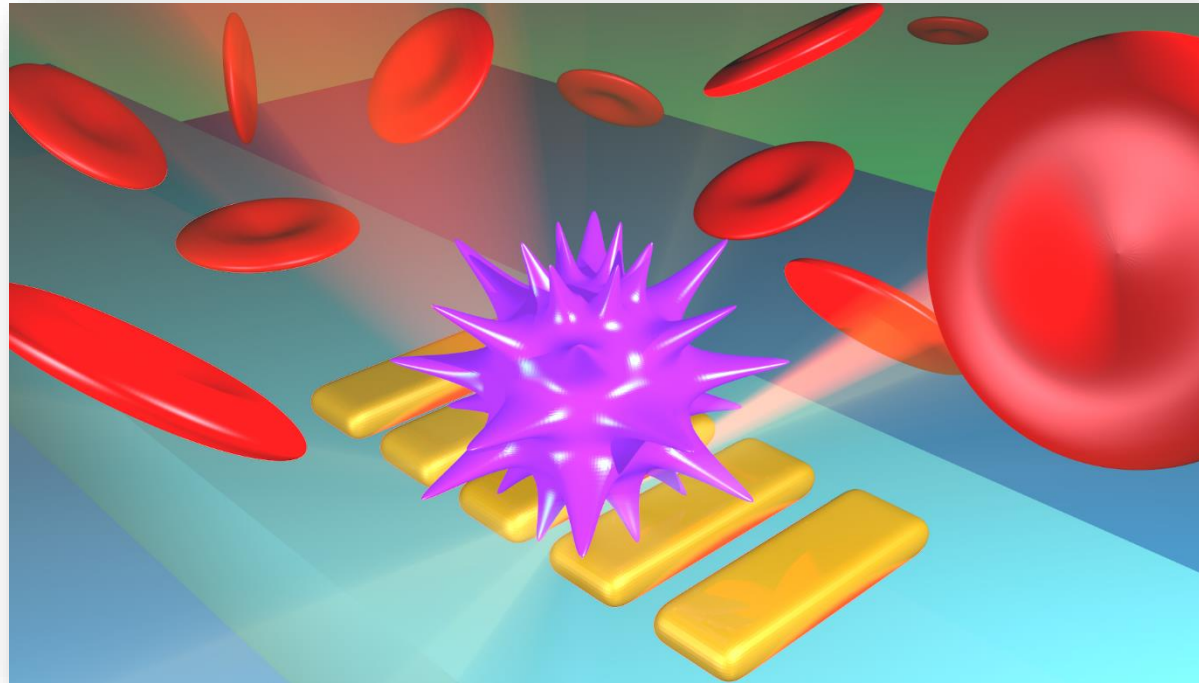
ECORFAN-México, S.C.
143 – 50 Itzopan Street
La Florida, Ecatepec Municipality
Mexico State, 55120 Zipcode
Phone: +52 1 55 6159 2296
Skype: ecorfan-mexico.s.c.
E-mail: contacto@ecorfan.org
Facebook: ECORFAN-México S. C.
Twitter: @EcorfanC

www.ecorfan.org

Holdings		
Mexico	Colombia	Guatemala
Bolivia	Cameroon	Democratic
Spain	El Salvador	Republic
Ecuador	Taiwan	of Congo
Peru	Paraguay	Nicaragua

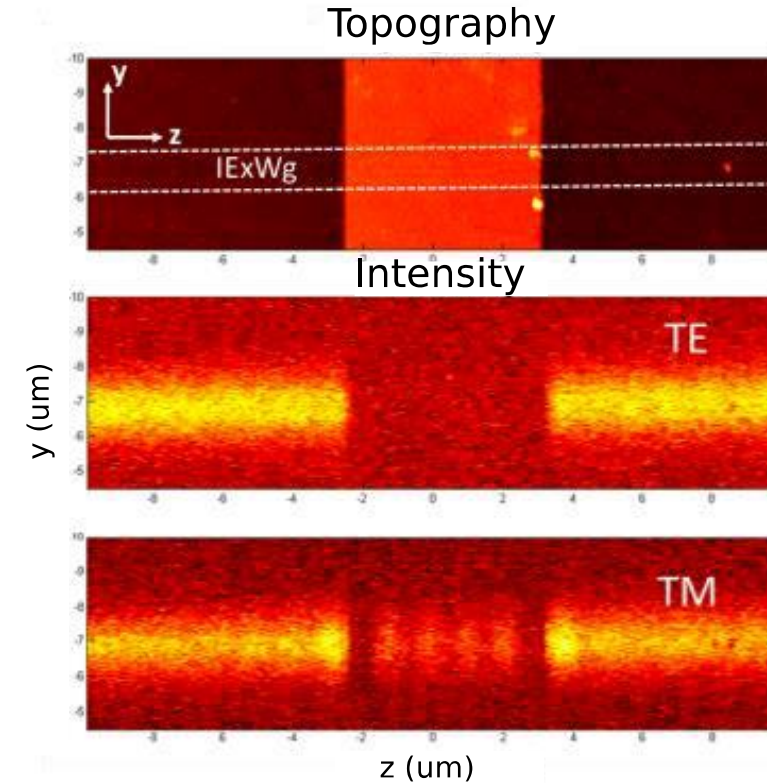
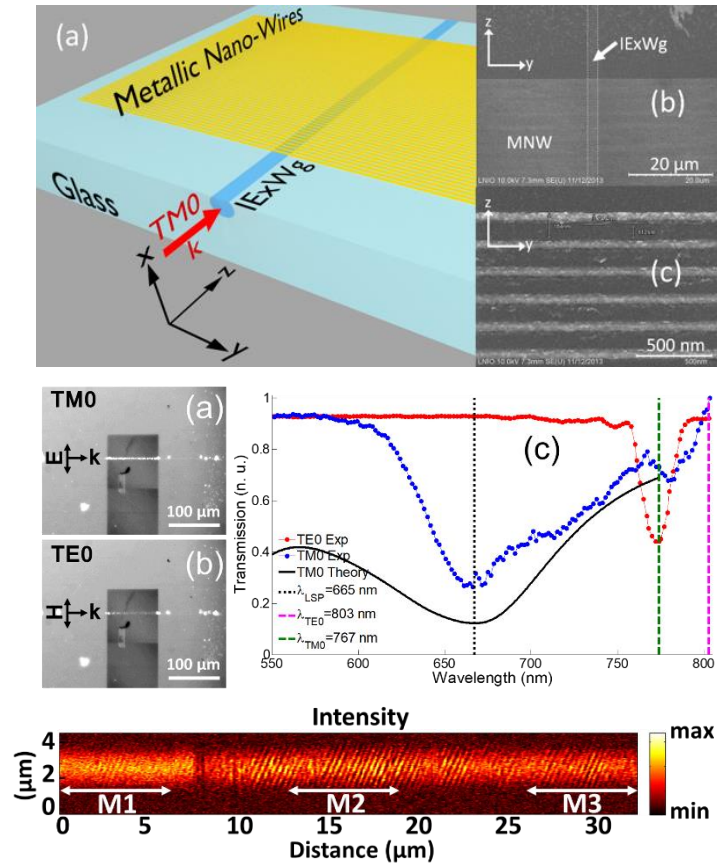
Introduction

Integrated metaphotonic devices for lab-on-a-chip applications



Introduction

Integrated metaphotonic devices

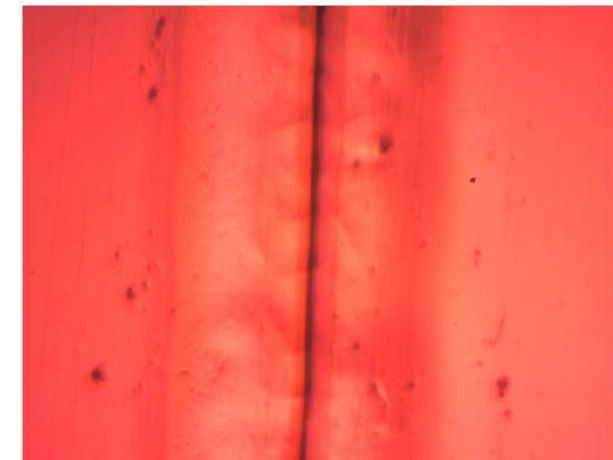
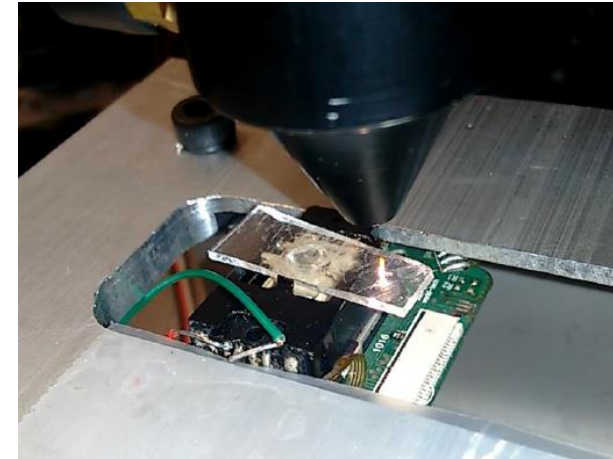
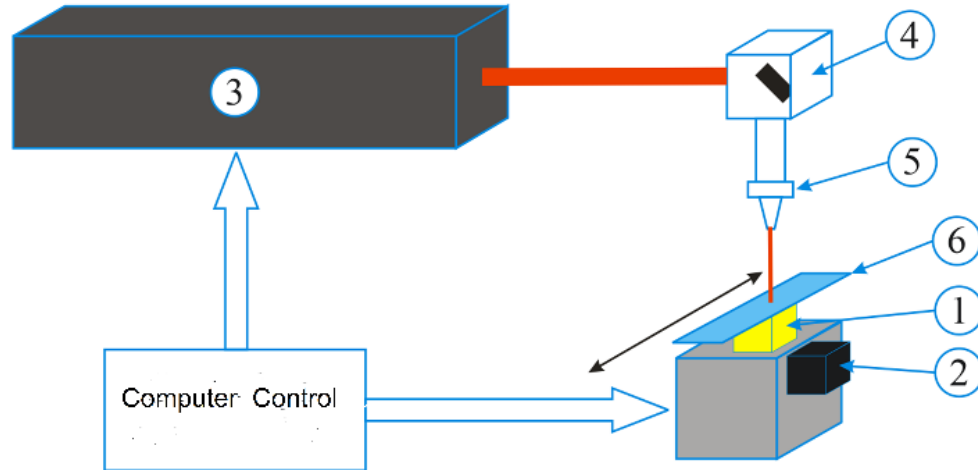


R. Tellez-Limon, et. al. In preparation (october 2019).

R. Tellez-Limon, et. al. Submitted to Physica Status Solidi B (august 2019).

Introduction

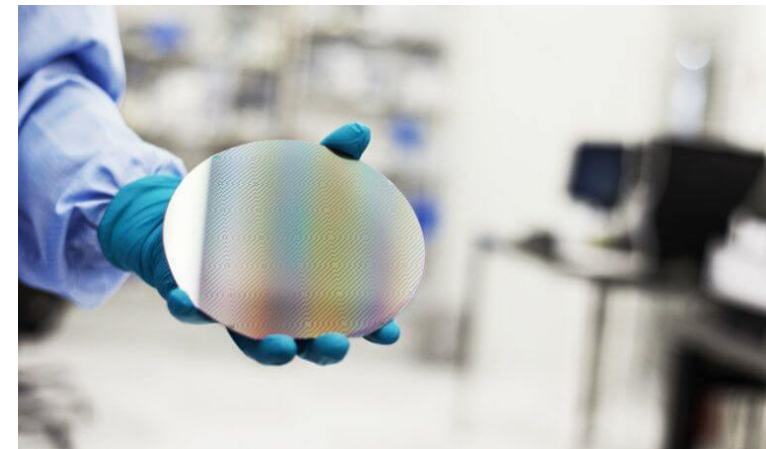
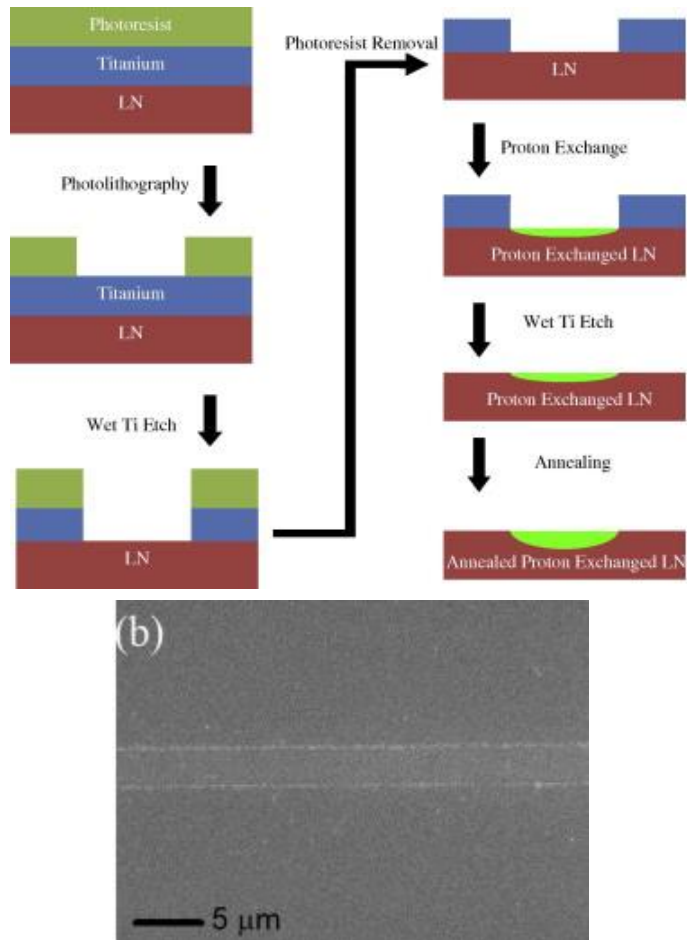
Fabrication of photonic waveguides for integrated plasmonics



R. Lopez, R. Tellez-Limon, V. Coello,
ECORFAN Journal Taiwan 2 (3), 23-28 (2018)

Introduction

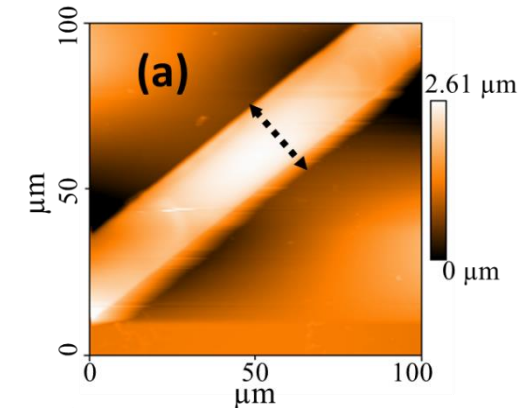
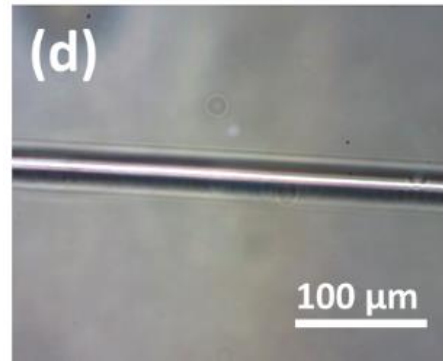
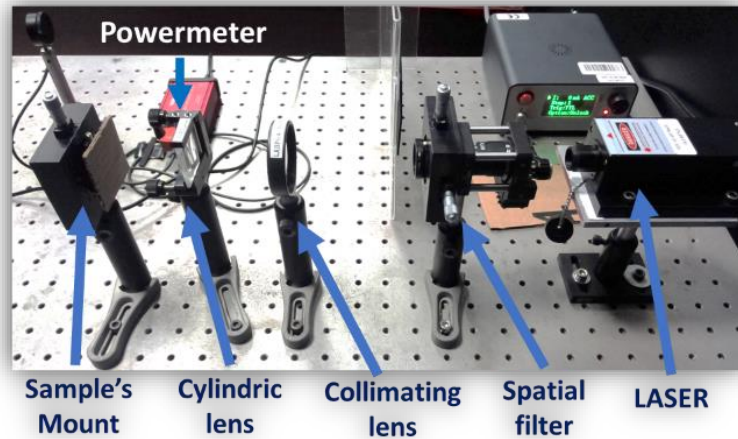
Fabrication of waveguides through photolithography



Nanoimprint lithography, NIL Technology

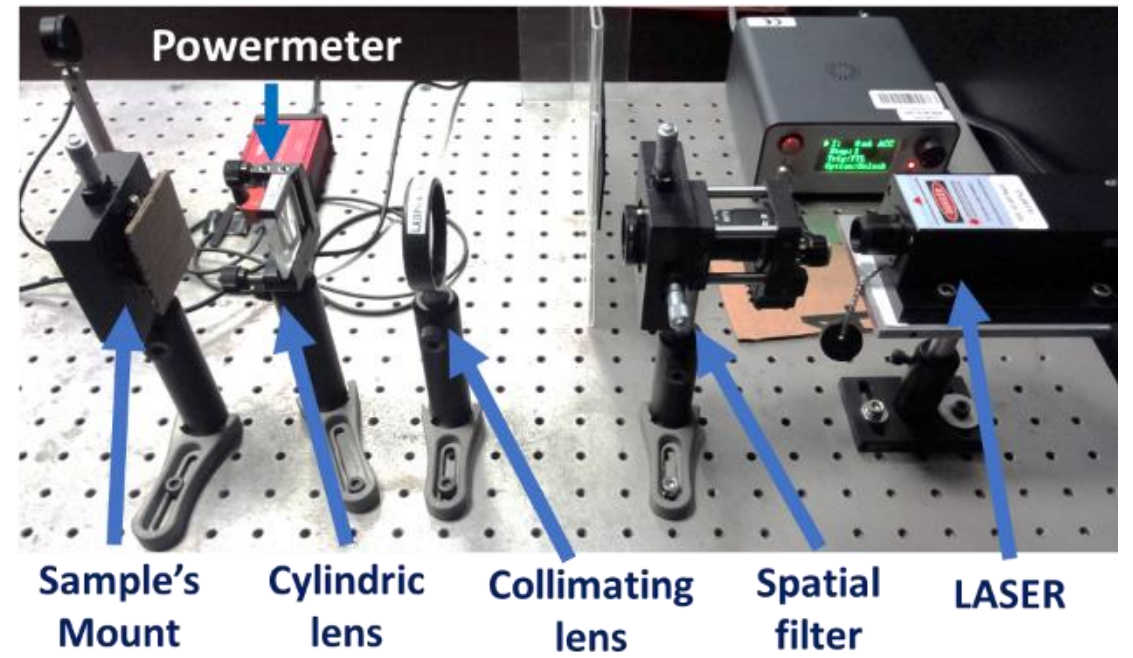
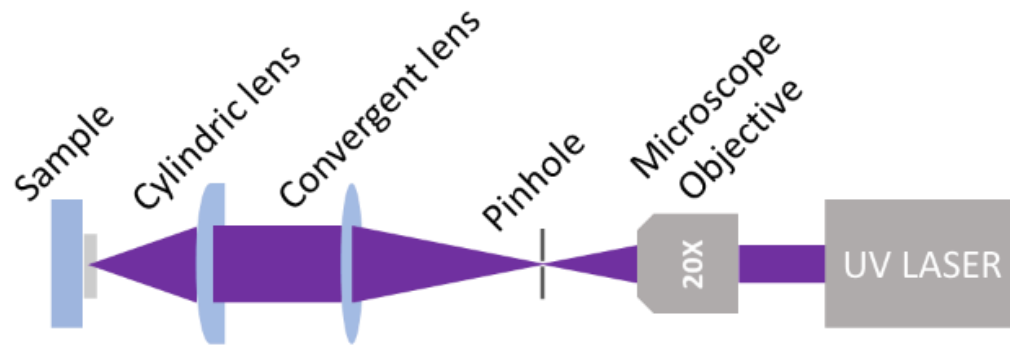
Objective

To develop a low-cost photolithography setup and experimentally determine a recipe for SU-8 patterning.



Methodology

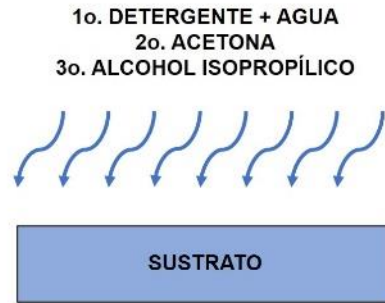
Experimental setup



Methodology

Photolithography process

1. Limpieza del sustrato



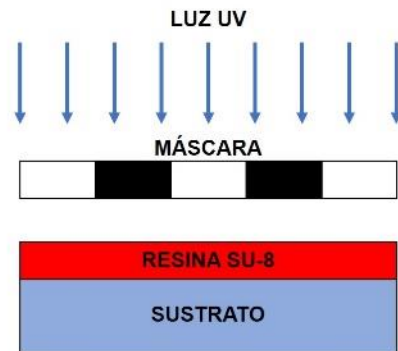
2. Spin-coating



3. Soft-bake (recocido suave)



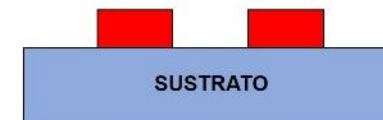
4. Exposición UV



5. Recocido

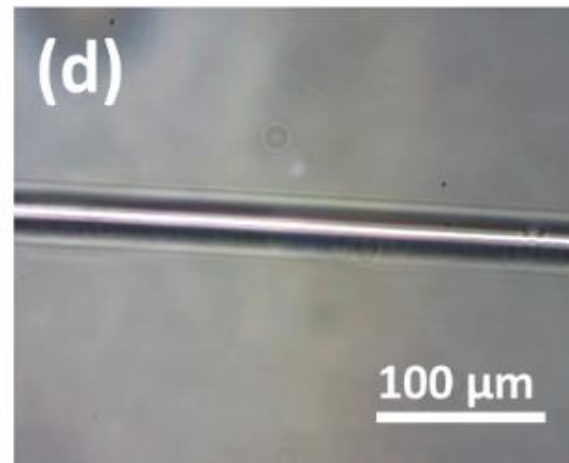
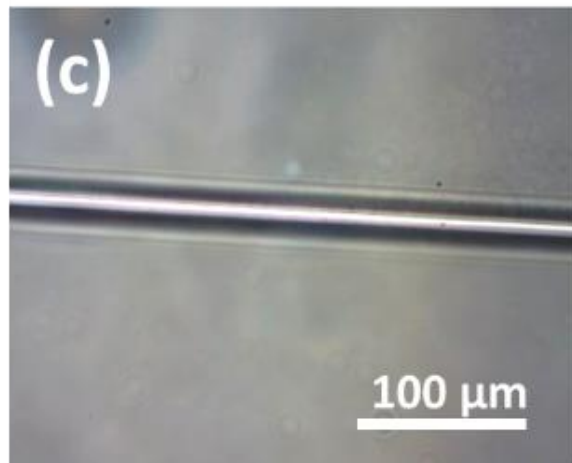
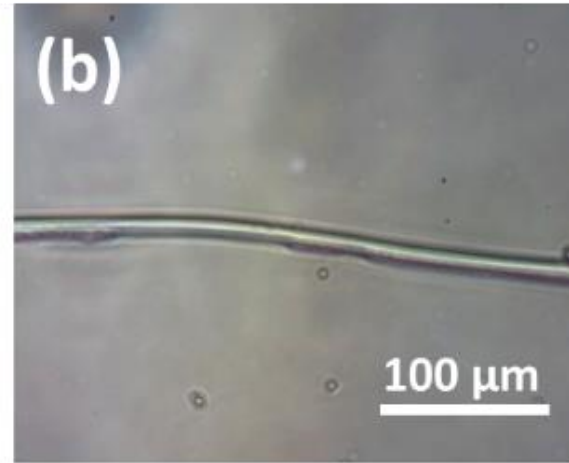
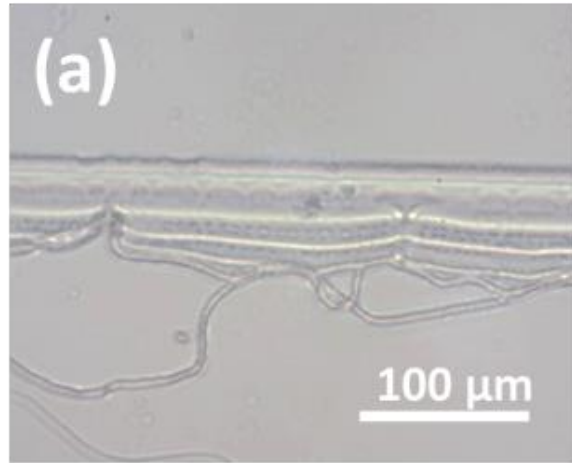


6. Revelado



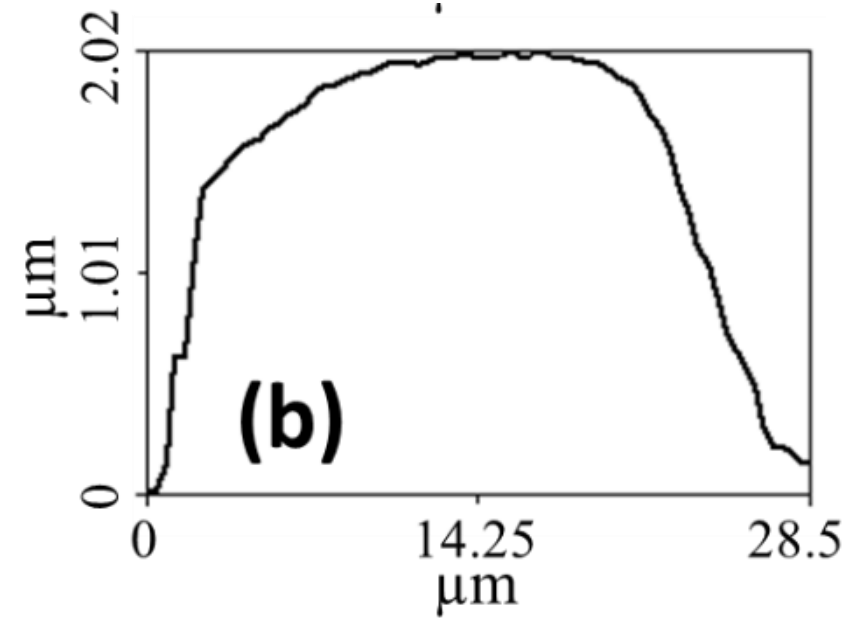
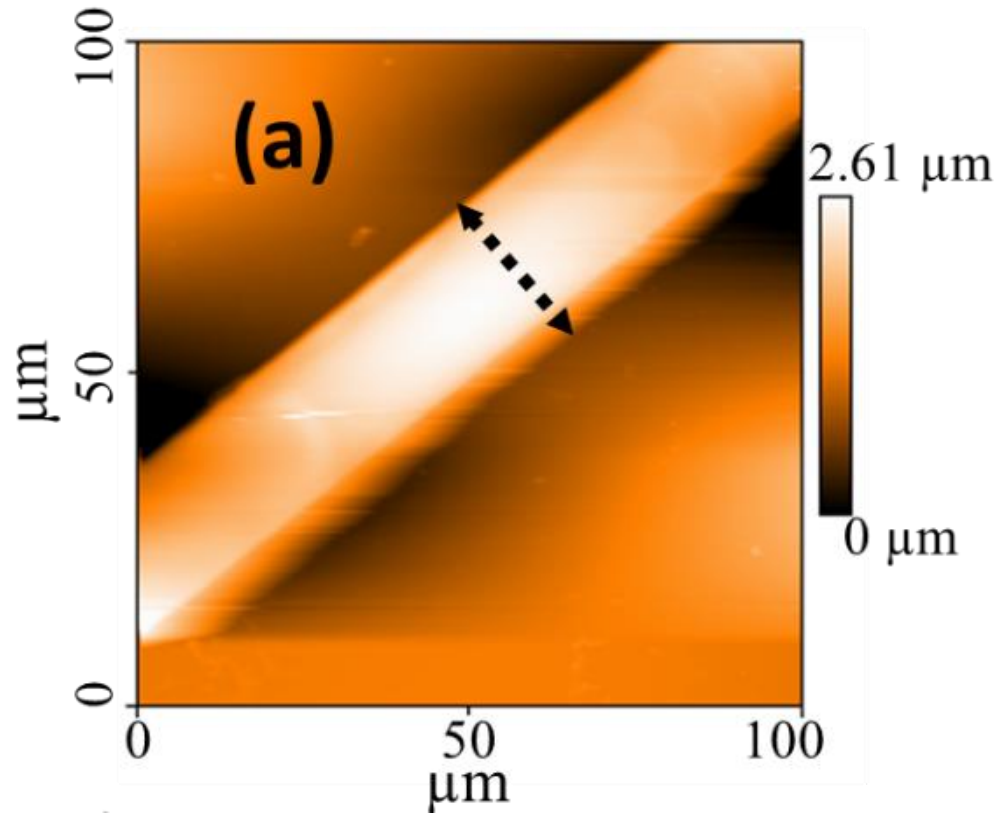
Results

Optical microscopy characterization



Results

AFM characterization



Results

Fluence versus width of the waveguide

Optical Power (mW)	Exposure time (s)	Optical energy (mJ)	Width (μm)
40	35	1400	29.9
40	40	1600	28.5
40	45	1800	29.2
40	50	2000	23.8

Conclusions

- The optimal fluence (optical energy) for SU-8 patterning should be between 1400 mJ and 2000 mJ.
- We were able to print lines of 28 μm (average) with our photolithography system.
- The resolution can be improved by properly focusing the light beam into the sample. This requires a numerically controlled stage.
- The obtained results open new perspectives for the fabrication of metamaterials at CICESE-Monterrey.



ECORFAN®

© ECORFAN-Mexico, S.C.

No part of this document covered by the Federal Copyright Law may be reproduced, transmitted or used in any form or medium, whether graphic, electronic or mechanical, including but not limited to the following: Citations in articles and comments Bibliographical, compilation of radio or electronic journalistic data. For the effects of articles 13, 162,163 fraction I, 164 fraction I, 168, 169,209 fraction III and other relative of the Federal Law of Copyright. Violations: Be forced to prosecute under Mexican copyright law. The use of general descriptive names, registered names, trademarks, in this publication do not imply, uniformly in the absence of a specific statement, that such names are exempt from the relevant protector in laws and regulations of Mexico and therefore free for General use of the international scientific community. BCIERMMI is part of the media of ECORFAN-Mexico, S.C., E: 94-443.F: 008- (www.ecorfan.org/ booklets)