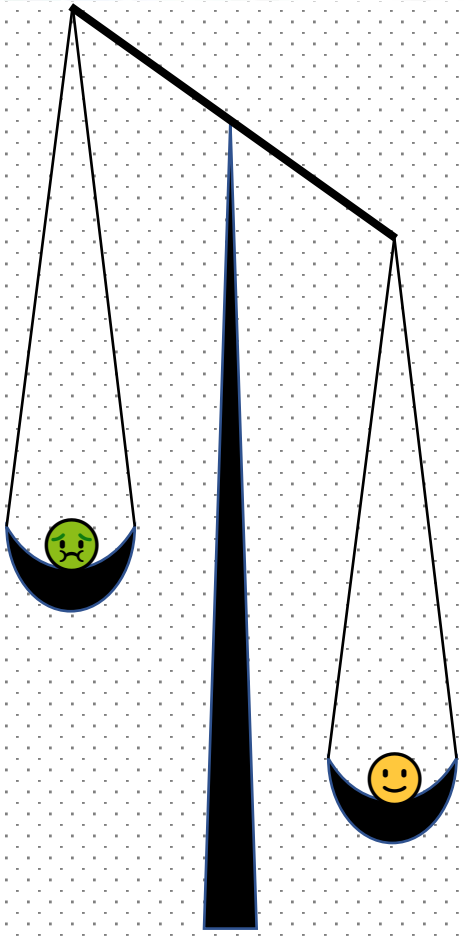
GMP
GENERAL MICROTECHNOLOGY & PHOTONICS

PHOTONICS PRIZE
GMP

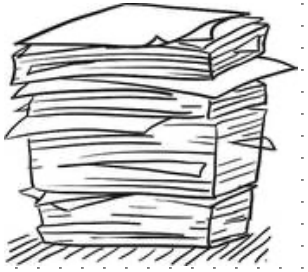
40 Years experience
40 ANS DE RAYONNEMENT
LASERPIONIERE SEIT 40 JAHREN
LASER PIONEERS FOR 40 YEARS



Evaluation Process

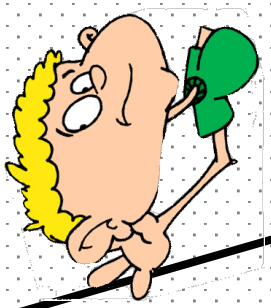
Round 1 : Paperwork

Result:
7 nominations for 1st prize



Round 2 : Meeting

2nd Prize is in the field of communication



Bob

Quantum Communication

Alice

It goes to team of 2 PhD students that theoretically:

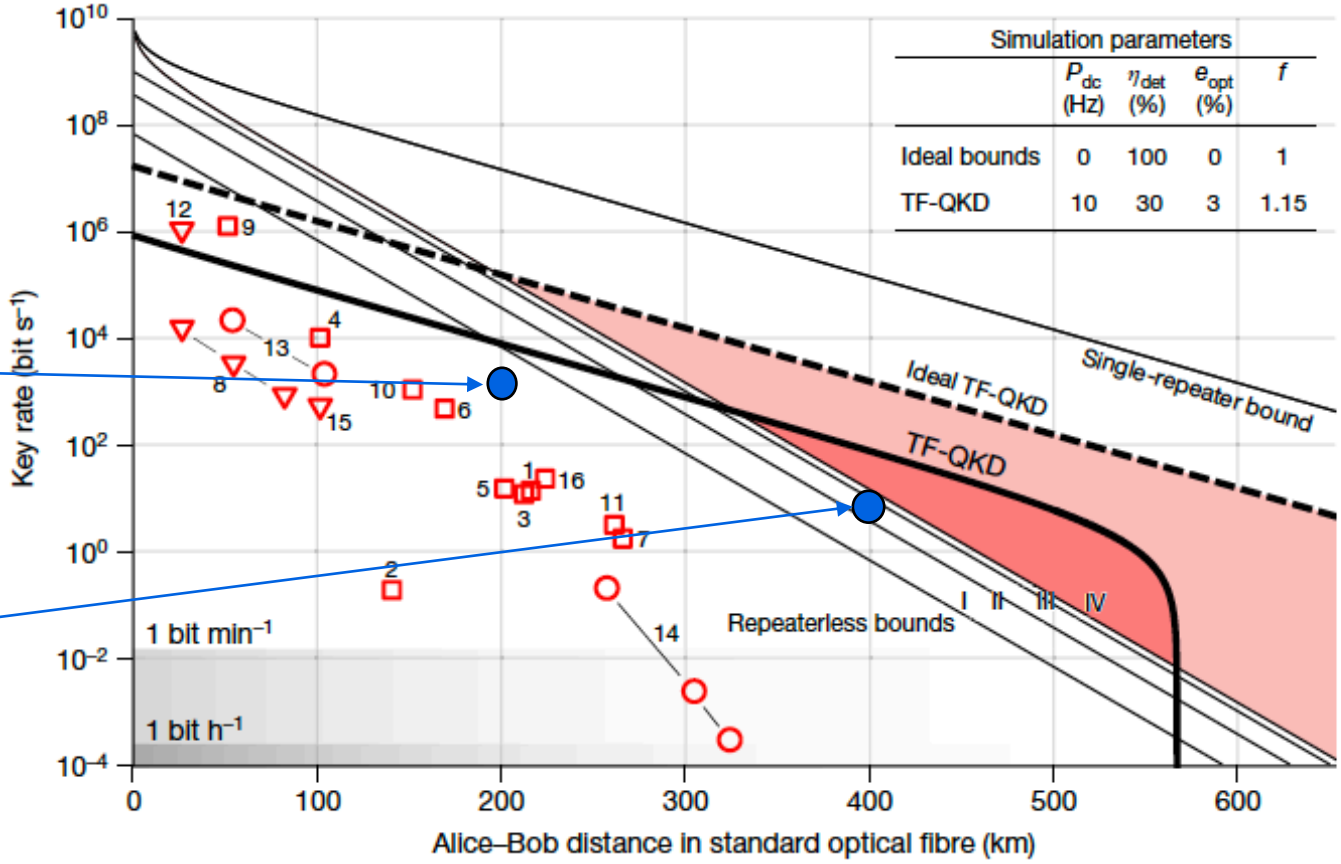
1. Showed that the 1-decoy state protocol allows achieving higher secret key rates within shorter acquisition time without scarifying on security
2. proved the security of a new and simplified quantum-key-distribution protocol (based on Bennett-Brassard, BB84) allowing simpler detection scheme
3. Potential of establishing new performance records

Quantum key distribution (QKD)

With their experimental work they established new performance record in this field:

App.Phys.Lett. 112, 171108 (2018)

Phys.Rev.Lett. 121, 190502 (2018)



M. Lucamarini et al , Nature 558, 403 (May 2018)

-> Possibility for direct industrialization

GMP
GENERAL MICROTECHNOLOGY & PHOTONICS

PHOTONICS PRIZE
GMP

40 Years experience
40 ANS DE RAYONNEMENT
LASERPIONIERE SEIT 40 JAHREN
LASER PIONEERS FOR 40 YEARS

Competition organised for the 40th anniversary of GMP SA

SECOND PRIZE

awarded to

Alberto Boaron and Davide Rusca

for their very important contribution to the technology
of long distance Quantum Key Distribution

The members of the jury


Prof. em. Dr. René Salathé
EPFL Lausanne


Ms. Nicoletta Casanova
CEO, FEMTOprint SA
Muzzano


Prof. Dr. Michael Graetzel
Head of Laboratory of Photonics and Interfaces, EPFL Lausanne

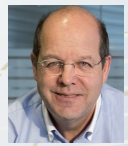

Prof. Dr. Ursula Keller
Ultrafast Laser Physics, Physics Department ETH Zurich / co-director NCCR MUST


Prof. Dr. Patrik Hoffmann
Head of Laboratory for Advanced Material Processing, EMPA Thun


Prof. Dr. Jérôme Faist
Institute for Quantum Electronics, ETHZ Zürich


Dr. Christian Bosshard
Head of CSEM Center Muttenz

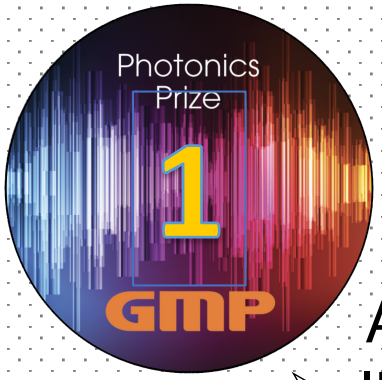

Prof. Dr. Christophe Moser
Head of Laboratory of applied photonic systems, EPFL Lausanne


Dr. Christoph Harder
President of Swissphotonics

For the Jury:
René Salathé

Brugg-Windisch,
4th December 2019

GMP SA
Fabio Manzini
Jean-Jacques Goy



Photonic Technology

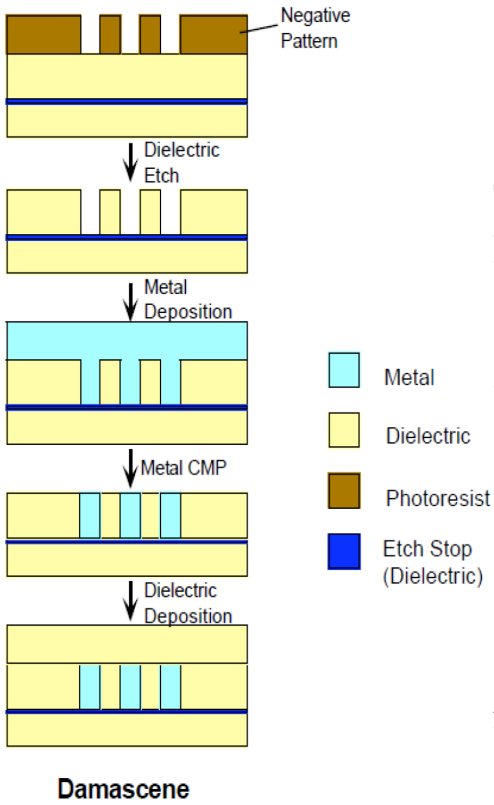
Miniaturization problem in IC-Fabrication in **1990**:
Al on ICs had to be replaced by Cu!

- IBM developed additive patterning procedure (Damascene process)

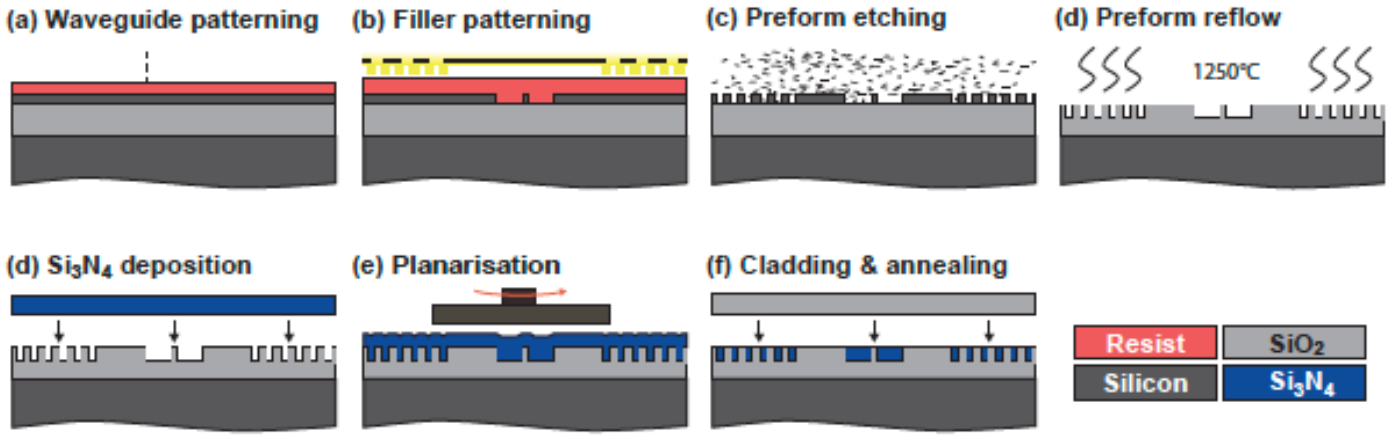
2010: Miniaturization problem in optical waveguides on Si: high losses !

2013-2018: PhD work @ EPFL:

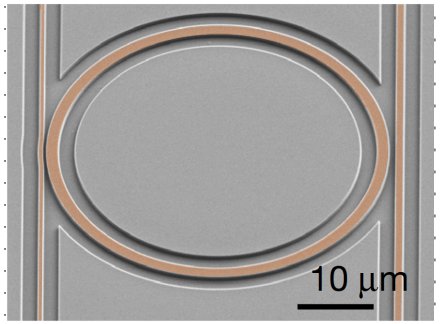
- Invention of the Photonic Damascene Process
- First demonstration of low loss Si_3N_4 waveguides of unprecedented height
- Breakthrough for on chip photonic integrated circuits & resonators



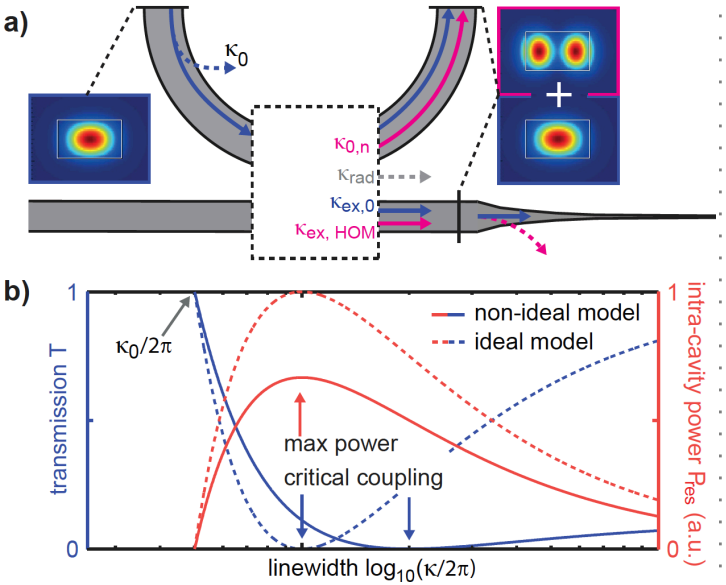
Photonic Damascene Process



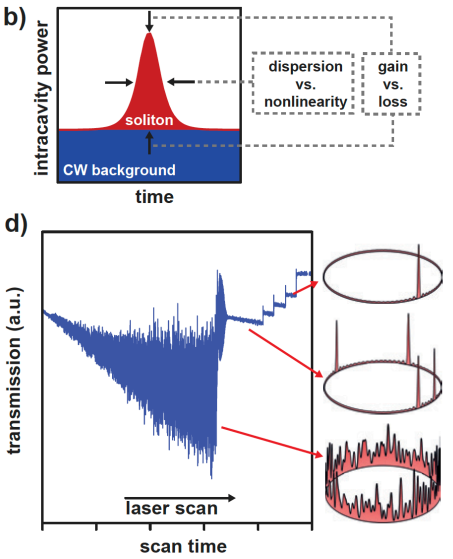
Optica 3(1), 2016 ->



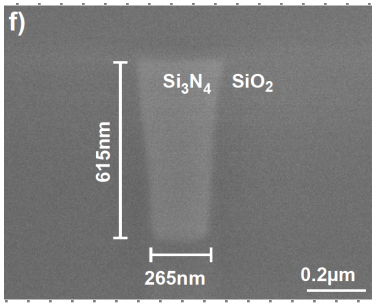
Nature 557, 81, 2018



PhD-Thesis , 2018



PhD-Thesis , 2018



PhD-Thesis , 2018

GMP
GENERAL MICROTECHNOLOGY & PHOTONICS

PHOTONICS PRIZE
GMP

40 Years experience
40 ANS DE RAYONNEMENT
LASERPIONIERE SEIT 40 JAHREN
LASER PIONEERS FOR 40 YEARS

Competition organised for the 40th anniversary of GMP SA

First Prize

awarded to

Martin Pfeiffer

for his fundamental contribution
to the manufacturing process of high performance optical on-chip waveguides

The members of the jury

Ms. Nicoletta Casanova
CEO, FEMTOprint SA
Muzzano

Prof. Dr. Michael Graetzel
Head of Laboratory of Photonics and Interfaces, EPFL Lausanne

Prof. Dr. Ursula Keller
Ultrafast Laser Physics, Physics Department ETH Zurich / co-director NCCR MUST

Prof. Dr. Patrik Hoffmann
Head of Laboratory for Advanced Material Processing, EMPA Thun

Prof. Dr. Jérôme Faist
Institute for Quantum Electronics, ETHZ Zürich

Dr. Christian Bosshard
Head of CSEM Center Muttenz

Prof. Dr. Christophe Moser
Head of Laboratory of applied photonic systems, EPFL Lausanne

Dr. Christoph Harder
President of Swissphotonics

Prof. em. Dr. René Salathé
EPFL Lausanne

Le président du Jury:
René Salathé

Brugg-Windisch,
le 4 décembre 2019

GMP SA
Fabio Manzini **Jean Jacques-Goy**