

NAVOLCHI

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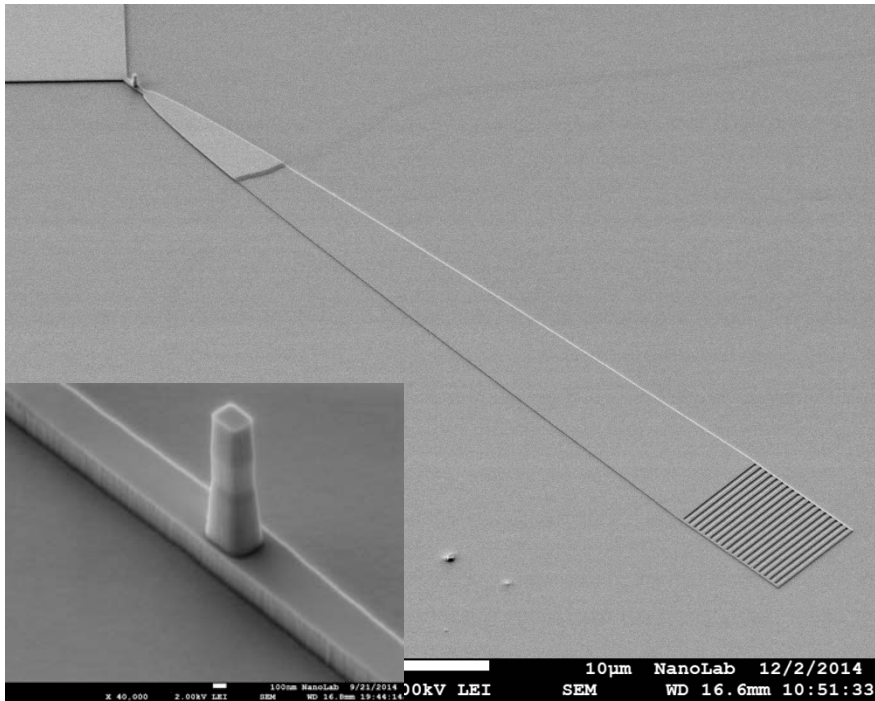
Where innovation starts

Milestones and Deliverables

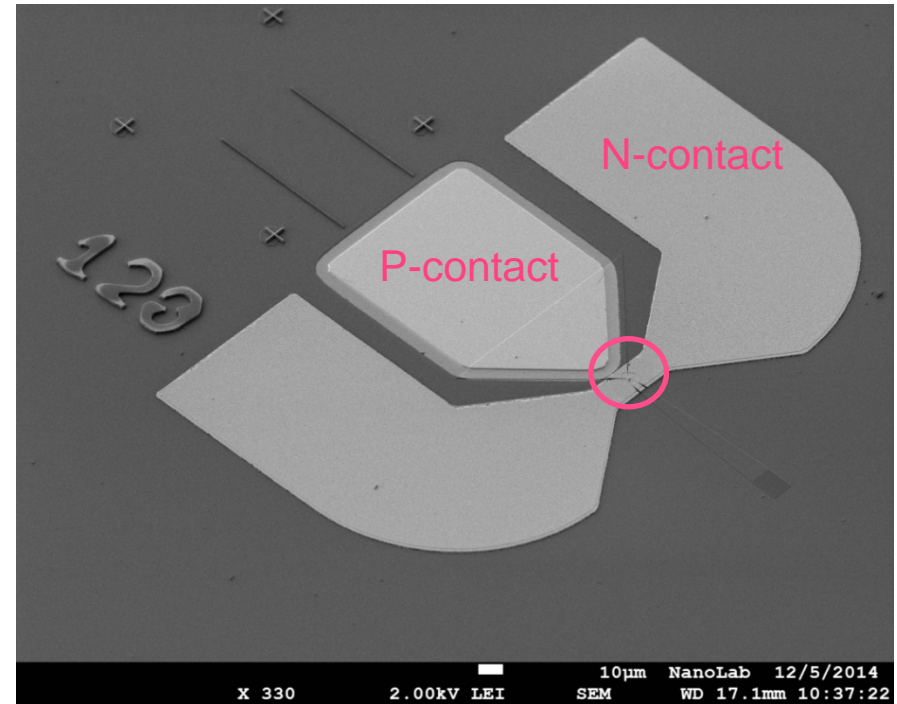
MS51	Report on enhanced metal grating couplers	WP7	TU/e	03/2014
D6.1	Individual plasmonic devices characterization, testing and evaluation	WP6	TU/e	03/2014
Updated D3.3	Fabrication of plasmonic laser device	WP3	TU/e	03/2014

Fabrication

- Before metallisation



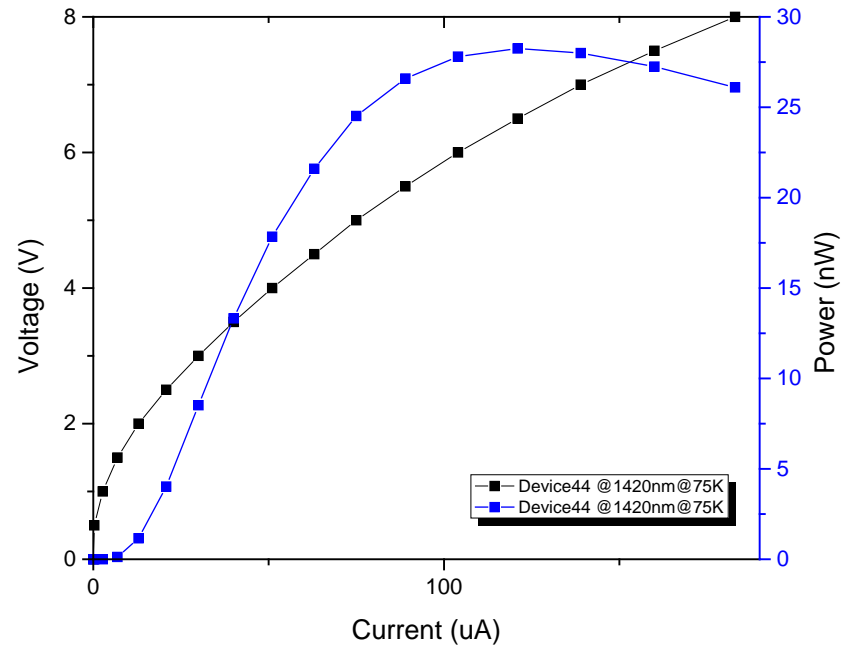
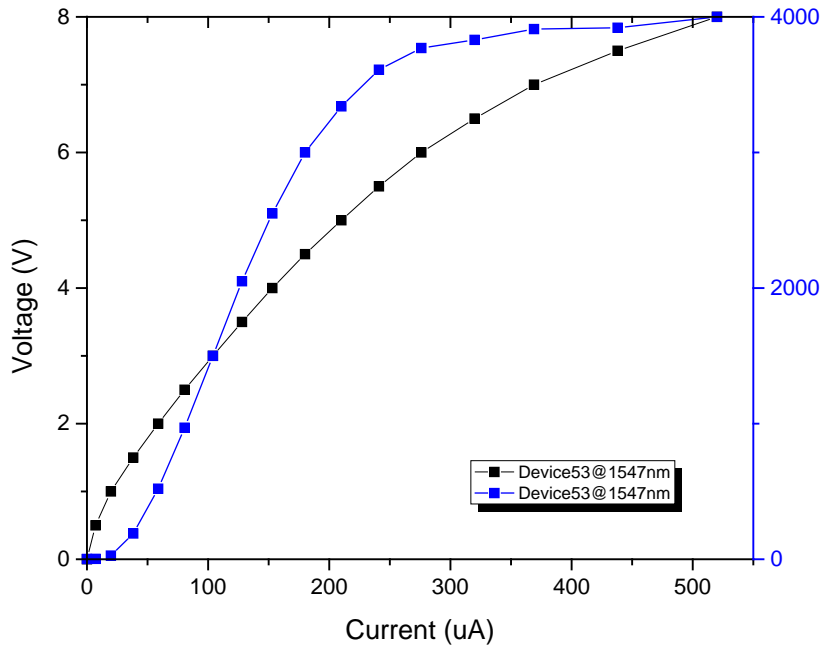
- After metallisation



L-I-V curve

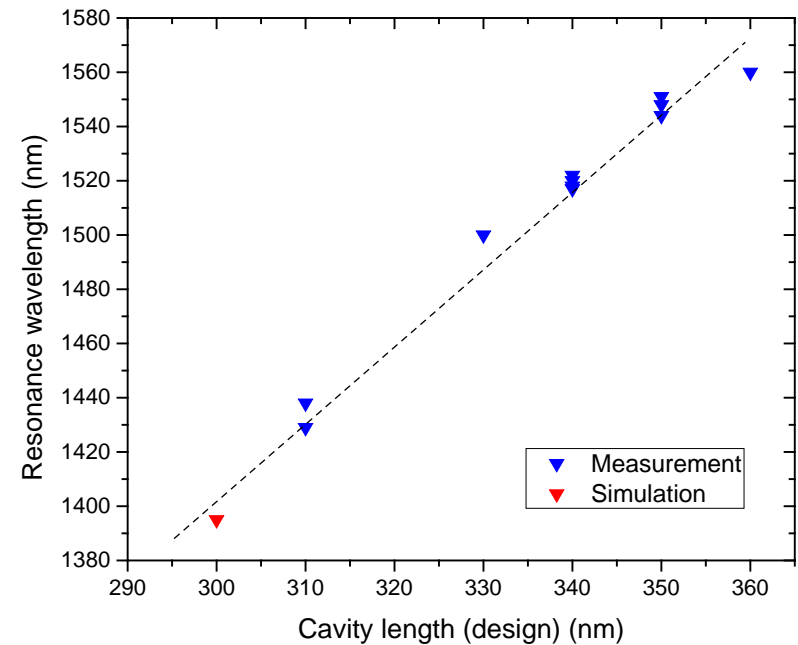
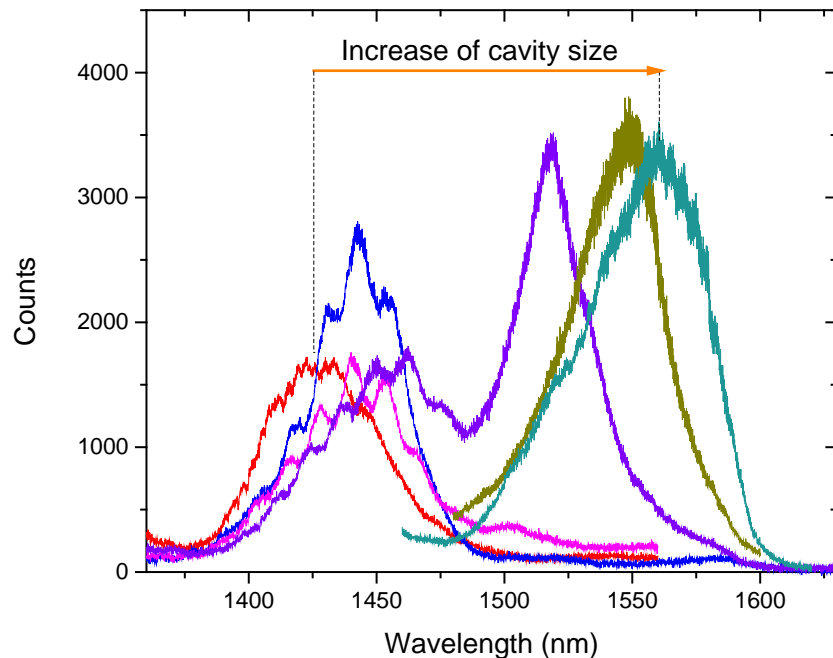
Left: room temperature;

Right: 75K



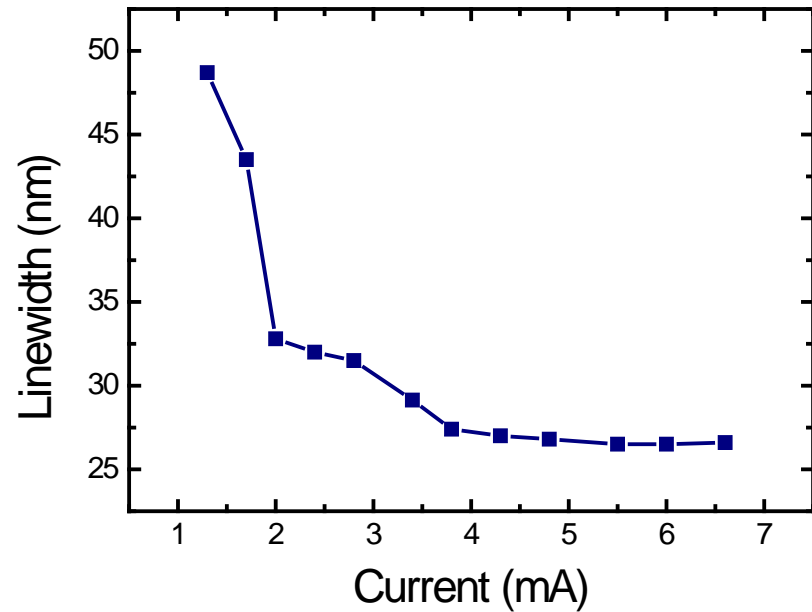
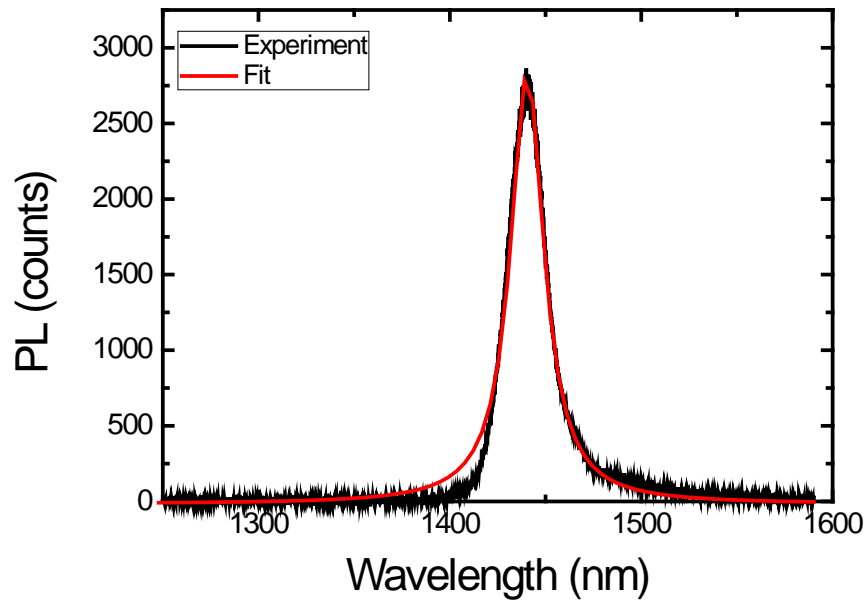
- 30nW collected
→ ~ few uW cavity emission

Resonance wavelength vs cavity size



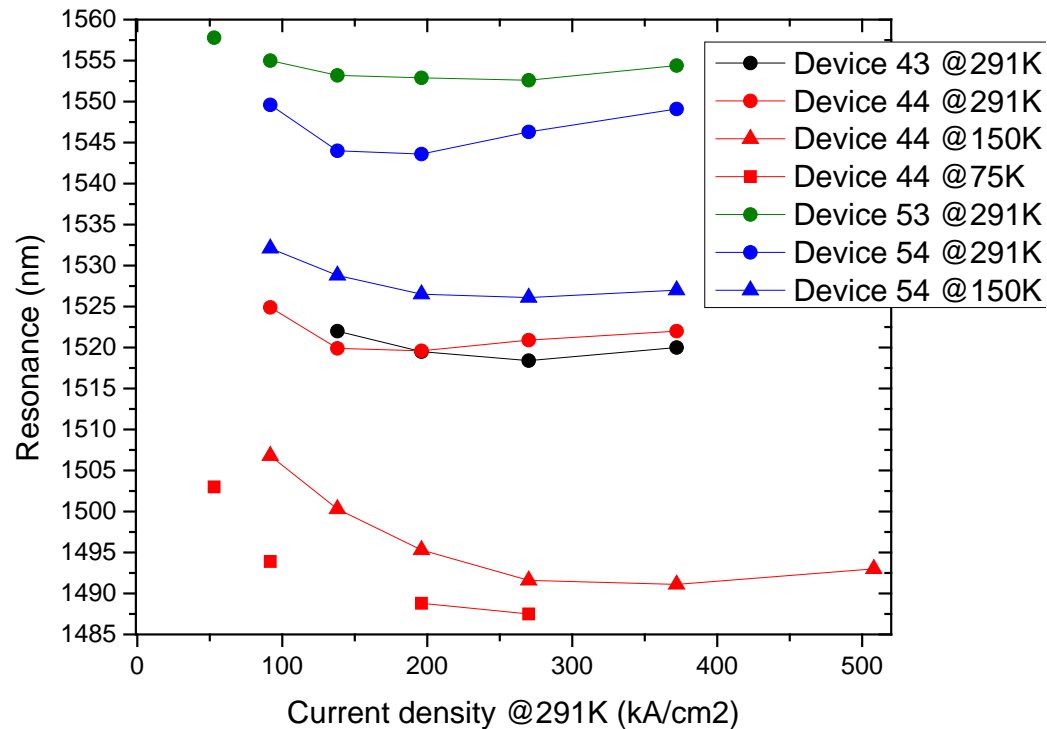
- Resonance wavelength is proportional to cavity size

Linewidth narrowing



- Linewidth reduction by a factor of 2

Resonance shift vs Carrier injection and Temperature

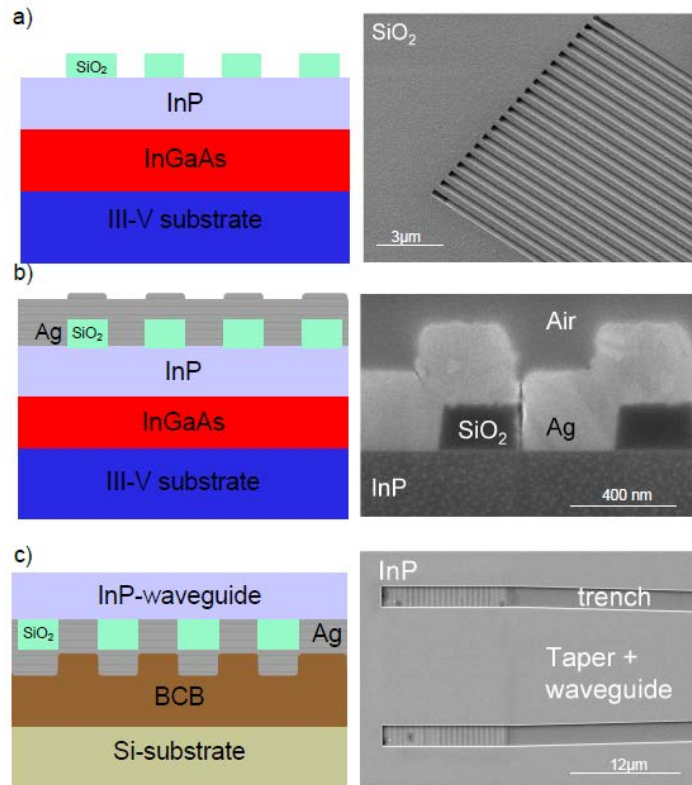


- Only blue shift ~before emission saturates, after saturation → red shift

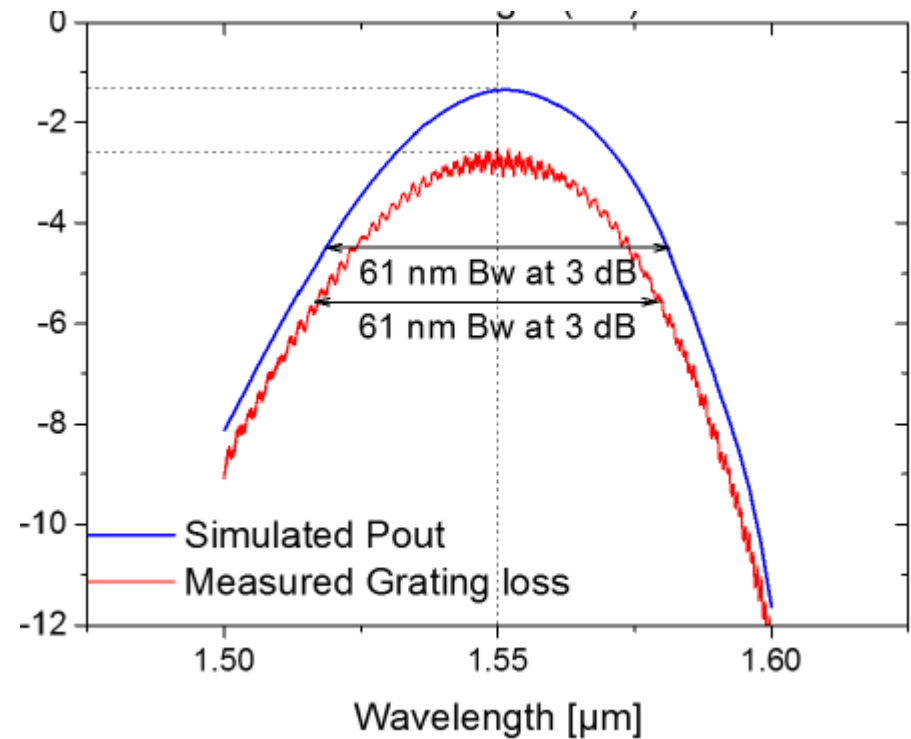
Metal grating coupler

Results of 2nd run

- Fabrication scheme



- Characterization: 56% of efficiency



Summary and conclusions

- Achievements
 - 1st metal-cavity nanoLED coupled to waveguide (III-V on silicon)
 - Improved metal grating coupler
- We will do a last run of nanolasers in the coming months
 - Main improvements: surface passivation, quality factor and better electrical contacts
 - Results might be available by the end of NAVOLCHI project
- Announcement
 - Directly modulated nanolaser is not a feasible scenario for NAVOLCHI

