Table 1. Characteristics of the nanowire-PhC structure

Nanowire dimensions in the coupled structure	g_{th} (cm^{-1})	β	F_p	Collection efficiency*	Beam directivity
Standard L3 PhC cavity					
r = 0.10a, L = a	$37x10^3$	0.03	2	16%	Low
r = 0.20a, L = a	$30x10^3$	0.08	-	32%	Low
r = 0.35a, L = 5a	$13x10^3$	0.30	-	66%	High
Optimized L3 PhC cavity					
r = 0.10a, L = a	$48x10^3$	0.03	1.5	74%	High
r = 0.20a, L = a	$32x10^3$	0.08	-	56%	Medium
r = 0.35a, L = 5a	$13x10^3$	0.32	-	63%	High

*The collection efficiency is defined as the percentage of emission from the nanowire-PhC structure lasing mode collected with an ideal objective with a numerical aperture of NA = 0.4.

Acknowledgments

The authors are grateful to Dr. N.V.Q. Tran for his help in developing the code for the calculation of far field patterns. This work was financially supported by the NTU NAP startup grant M58110065, the MERLION Programme 2010 of the French Embassy in Singapore (dossier 2.04.10), and the Funding of Initiatives in Support of NTU 2015 (M58110092). C.W. gratefully acknowledges the joint PhD program between the Nanyang Technological University and ParisTech.