利用課題番号　：F-13-NM-0083
利用形態　：技術代行
利用課題名（日本語）　：
Program Title（English）　：Silicon photonic devices for application
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１．概要（Summary）：

Si photonics is attracting much attention as an enabler of electronic-photonic convergence on Si CMOS platform. The application of Si photonic devices is promising to bring the great development of optical communication. In this program, the nanofabrication is to be employed to prepare the silicon waveguide and devices.

２．実験（Experimental）：

【利用した主な装置】

- Electrical Beam Lithography System
- Silicon Deep RIE System

【実験方法】

Silicon waveguides and micro-ring resonators were defined by Electrical Beam Lithography and then the waveguides were formed by RIE. To check the performance of silicon micro-ring resonators fabricated, the photoluminescence (PL) spectra of the silicon micro-rings were characterized by a micro-PL system.

３．結果と考察（Results and Discussion）：

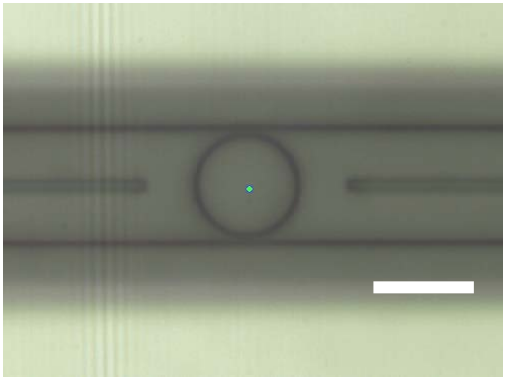

Figure 1. Typical optical microscope image of the silicon micro-ring resonator (scale bar: 10μm)

Silicon micro-ring resonator with a radius of 5 μm and 450 nm by 250 nm cross-section of the ring waveguide is fabricated as shown by Fig.1. The typical PL spectrum is plotted in Fig. 2. An enhancement of resonant peak can be observed from the spectrum, which is mainly due to the Purcell Effect. The clear peaks indicate the good quality of silicon micro-ring resonators as fabricated. The PL spectra of different micro-ring resonators show that the average deviation of the resonant peak is around 1 nm.

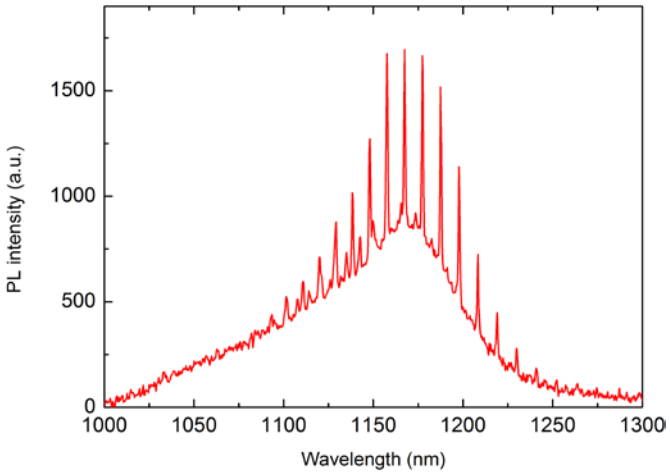

Figure 2. Typical PL spectrum of the fabricated silicon micro-ring resonator.

４．その他・特記事項（Others）：

なし

５．論文・学会発表（Publication/Presentation）：

なし

６．関連特許（Patent）：

なし