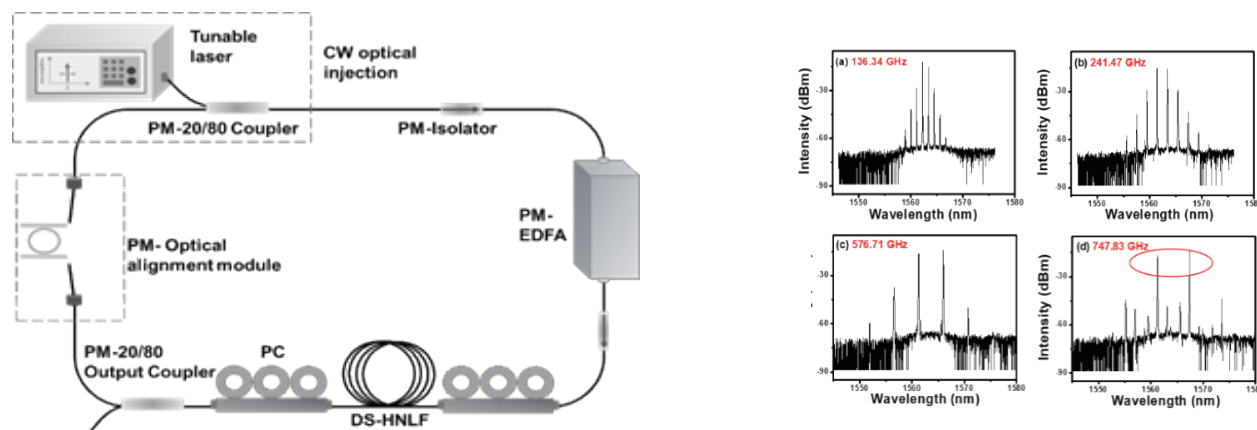


鎖模光纖雷射

過去多年來我們持續針對高重複率鎖模光纖雷射進行了創新的實驗研究，包括領先使用 high nonlinear fiber + silicon-based micro-ring resonator 來達到 250GHz 的高脈衝重複率被動鎖模，以及使用 nonlinear silicon-based micro-ring resonator 來達到 110 GHz 的高脈衝重複率被動鎖模等。最近我們利用 intra-cavity birefringent fiber interferometer 與 Fabry-Perot Etalon 也可達到新穎的 burst-mode mode-locking 態，產生 100-400GHz 的 pulse bunch，也成功達到 10-20GHz 光頻穩定主動鎖模光纖雷射，這些都是相當具新穎性的結果。過去一般的高脈衝重複率 (>100GHz) 鎖模光纖雷射之穩定性都還有很大的改進空間，最近我們發展出兩種改善鎖模光纖雷射穩定性的新方法，算是這方面的新突破。其中 Micro-ring assisted mode-locked fiber laser with optical injection-locking 的方法特別具新穎性並能達到很好的雷射特性，未來還會有持續的發展。



說明: Micro-ring assisted mode-locked fiber laser with optical injection-locking

[Sample publications]

1. S.-S. Jyu, L.-G. Yang, C.-Y. Wong, C.-H. Yeh, C.-W. Chow, H.-K. Tsang, Y. Lai, "250-GHz passive harmonic mode-locked Er-doped fiber laser by dissipative four-wave mixing with silicon-based micro-ring," IEEE Photonics Journal, 5(5), 1502107, 2013.
2. S.-M. Wang, Y. Lai, "Up to 400 GHz burst-mode pulse generation from a hybrid harmonic mode-locked Er-doped fibre laser," Laser Physics Letters, 14(2), 025102, 2017.
3. C.-J. Luo, P.-H. Yen, and Y. Lai, "Environmentally stable 100 GHz hybrid mode-locked burst-mode fiber laser with enhanced autocorrelation contrast," OptoElectronics and Communications Conference (OECC) 2019.
4. P.-H. Yen, C.-J. Luo, C.-Y. Li, and Y. Lai, "Tunable optical frequency comb generation based on a micro-ring assisted fiber laser with optical injection-locking," OSA Frontier in Optics (FiO) 2019.