ISSN: 2996-962X

Short Communication

Archives of Biology & Life Sciences

A Brief Report: Clinical Healthcare with 3D Photonic Quantum Ring Laser

O Dae Kwon* and B. H. Park

Department of Electrical & Electronics Engineering, Pohang University of Science and Technology (POSTECH), 790-784, S. Korea

***Corresponding Author**
O Dae Kwon, Department of Electrical & Electronics Engineering, Pohang University of Science and Technology (POSTECH), 790-784, S. Korea.

Submitted: 2026, Feb 23 ; **Accepted**: 2026, Mar 25; **Published**: 2026, Apr 15

Citation: Kwon, O. D., Park, B. H. (2026). A Brief Report: Clinical Healthcare with 3D Photonic Quantum Ring Laser. *Archives Biol Life Sci, 3*(1), 01-04.

Abstract

We show a non-invasive brain/breast diagnostic platform of microscopic angle-resolved coherent tomographic infrared spectroscopy (ACTIRS), with ultra-low threshold current 3D photonic quantum ring (PQR) laser devices, while creating unexpected 3D blue-shift spectra from CW/CCW helical standing wave propagation within the PQR's self-born resonant toroidal cavity. It is well known that London's St. Paul dome whose gallery famous as 2D whispering gallery (WG), below which is the first 2D WG laser, made by AT&T (1992), as shown in Figure 1 (top). Next, Figure 1 (bottom) shows the Baptistery of St. John in Pisa, whose dome would allow 3D whispering cave mode (WCM) instead, an ideal example for the 3D PQR laser of resonant double helix.

Keywords: Bio-Based Feed Additives, Metabolic Modulators, Small Ruminants, Local Biomass, Sustainable Livestock, Circular Bio Economy

1. Introduction

Figure 1 (top) London's St. Paul dome with 2D WG; first 2DWG laser made by AT&T(Slusher) APL 60, 289 (1992); Figure 1 (bottom) Baptistery of St. John in Pisa, whose dome will allow 3D whispering, an ideal example for PQR laser of Resonant Double Helix Waves (CW and CCW) within SELF-BORN toroidal WCM cavity.

We also add that angle-resolved light cones (ALCs) suggest a macro-to-micro1:1 correspondence, or Penrose's conformal cosmology of big bang in near free-vast space vs. the ALCs from 3D PQR, in time-like features propagate through murky and bloody medium of human organ. Cerebro-Spinal Fluid (CSF) gradient will be detected along carotid canal to brain, the blood line concentration gradient, through Bernoulli relation between flow and pressure to check the CSF state.

3D PQRs who's unusual WCM behaviors and very low threshold currents, as shown in Figures 2 and 3.

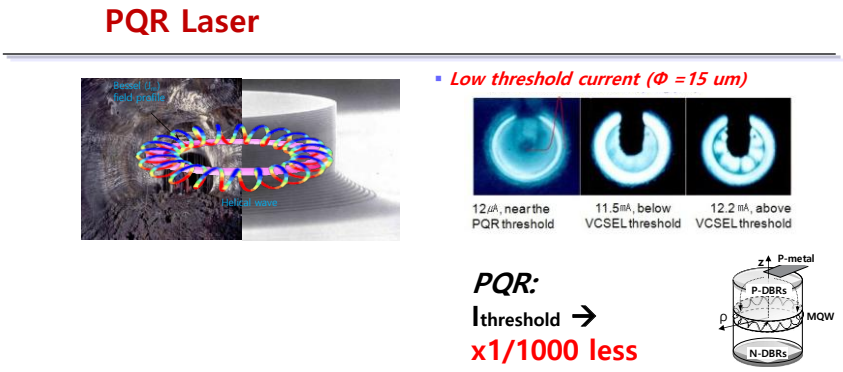


Figure 1

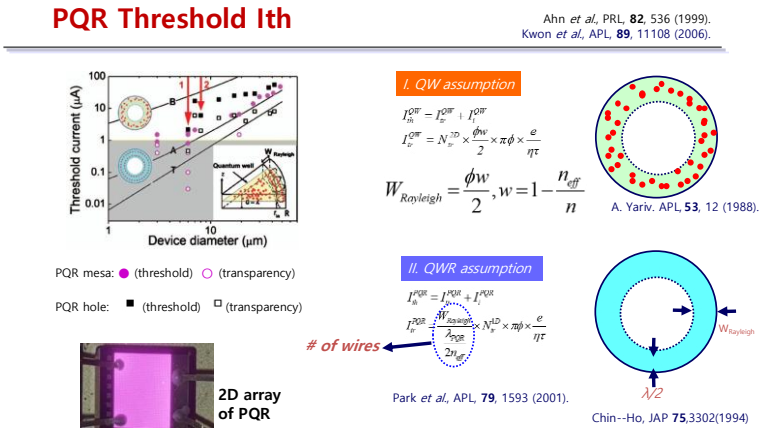


Figure 2

The PQR's helix modes of the WCM can be decomposed into a bouncing wave between the two DBRs and a circulating wave of in-plane total reflection for a simplified analysis. The corresponding angles θm of the quantization emission are given in Figure 4 where m is a mode index corresponding to the first zero of the Bessel function

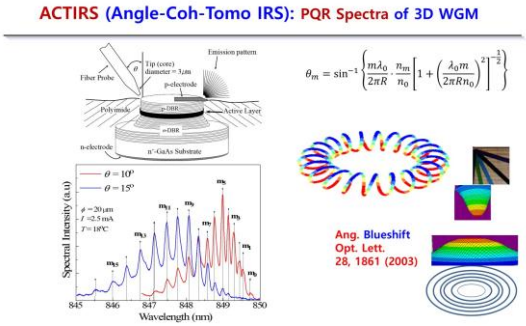


Figure 3

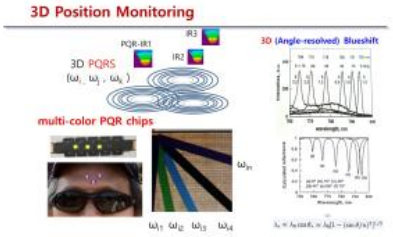


Figure 4

When the ACTIRS data, a transmission mode (Figures), easily developed toward gathering large clinical data accumulations enough for computing analysis, even becoming portable as well, then we will feel easy and do not worry seriously any more regarding our brain, breast, heart or other clinical healthcare for our wellness; the breast in particular sticks in my mind.

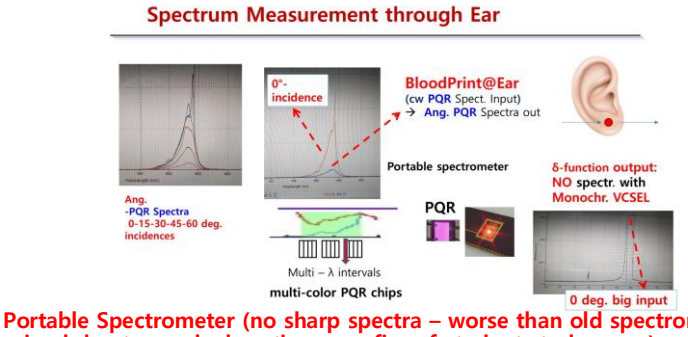


Figure 5

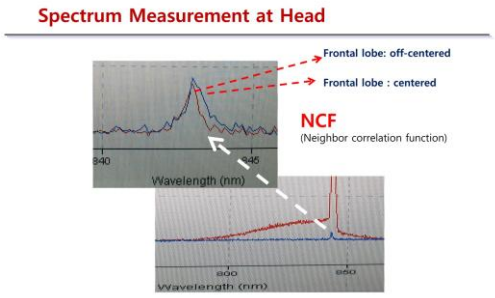


Figure 6

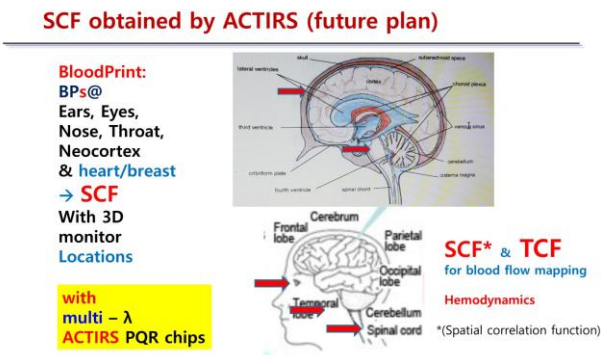
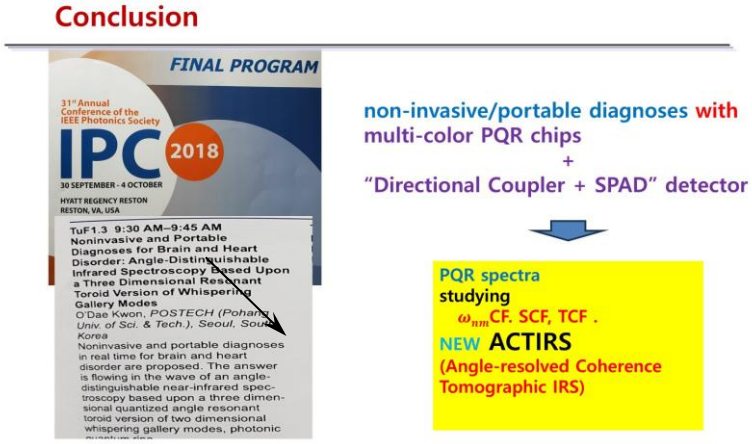


Figure 7

Now we figure that the helical WCM standing wave manifold transiently induces concentric PQRs for imminently recombinant carriers present in the Rayleigh region W[Rayleigh] of the 2D quantum well. This in turn exhibits extremely small thresholds in the μA-to-nA range with the given sq.-rt. T dependent thermal stabilities [1-7].

It shows a collection of linewidth data being roughly inversely proportional to the device size as expected. The narrowest linewidth observed with an optical spectrum analyzer to date from a 10 μm PQR is 0. ˚A at an injection current of 800 μA. We also note that with wet etching steps employed instead of dry etching, the Q factor reached up to 20,000 andthe linewidth approached 0.4 ˚A.



References

1. Ahn, J. C., Kwak, K. S., Park, B. H., Kang, H. Y., Kim, J. Y., & Kwon, O. D. (1999). Photonic quantum ring. *Physical review letters, 82*(3), 536.
2. Park, B. H., Bae, J., Kim, M. J., & Kwon, O. D. (2002). Chiral wave propagation manifold of the photonic quantum-ring laser. *Applied physics letters, 81*(4), 580-582.
3. Kwon, O. D., Park, B. H., et al. (2006). Hole emitter of photonic quantum ring. *Applied Physics Letters, 89*(10), 101108.
4. Kim, Y. C., Shin, M. H., Chae, K. H., Kim, C. H., & Kwon, O. D. (2009). Photonic quantum ring flower laser of whispering cave mode. *Electronics Letters, 45*(14), 739–741.
5. Kwon, O. D., Sheen, M. H., & Kim, Y. C. (2010). Photonic quantum ring laser of whispering cave mode. In Advances in Optical and Photonic Devices. IntechOpen.
6. Kim, D. K., Kim, Y. C., Sheen, M. H., & Kwon, O. D. (2010). Spatiotemporal dynamics in Rayleigh band of photonic quantum ring laser. *Optical and Quantum Electronics, 41*(11–13), 913–919.
7. Kwon, O. D., Kim, T. H., Kim, T. K., Kim, K. H., Lee, J. S., Kim, D. K., Sheen, M. H., & Kim, Y. C. (2011). Photonic quantum ring from quantum corral of whispering cave mode. In Kwon, O. D., An, K., & Lee, B. (Eds.), Trends in Nano and Micro-Cavities (pp. 152–187). Bentham Science Publishers.