



實驗室指導老師：李澄鈴 教授

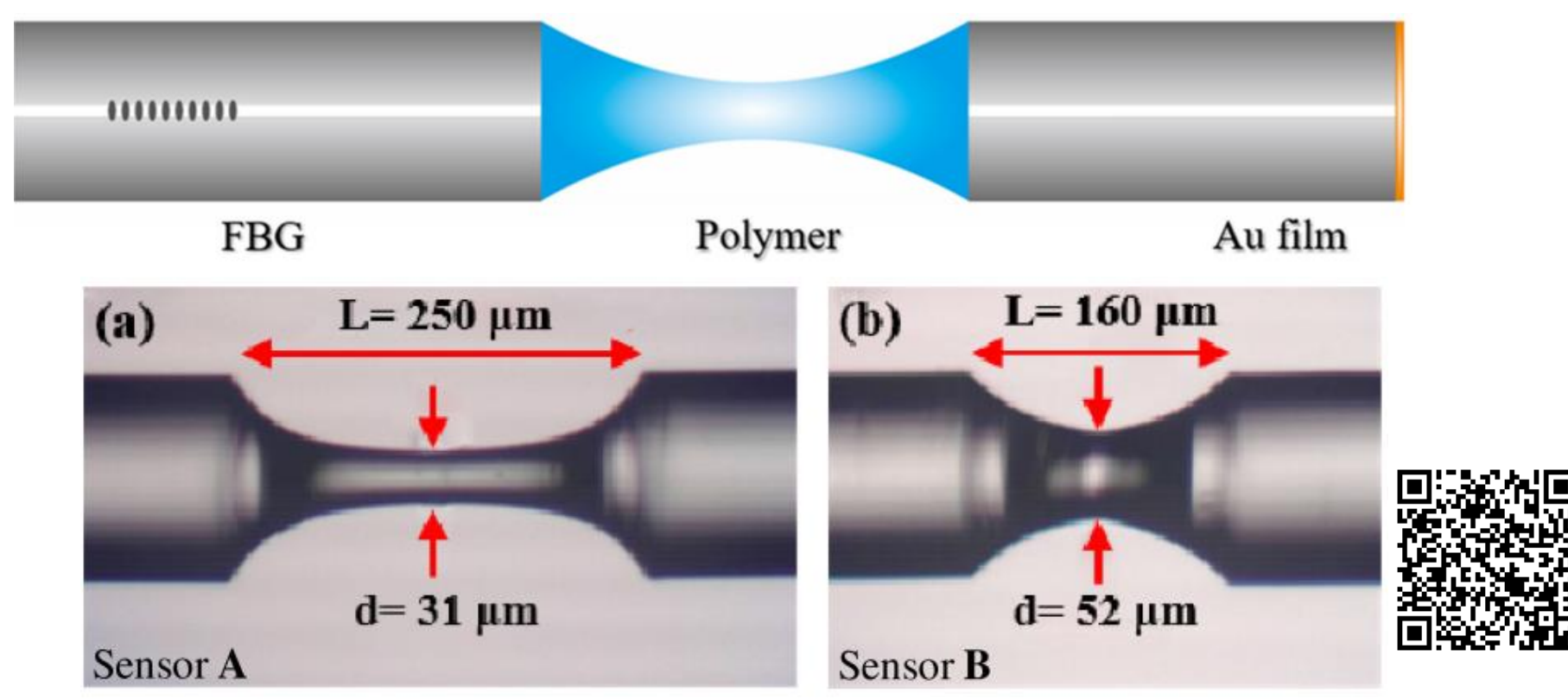
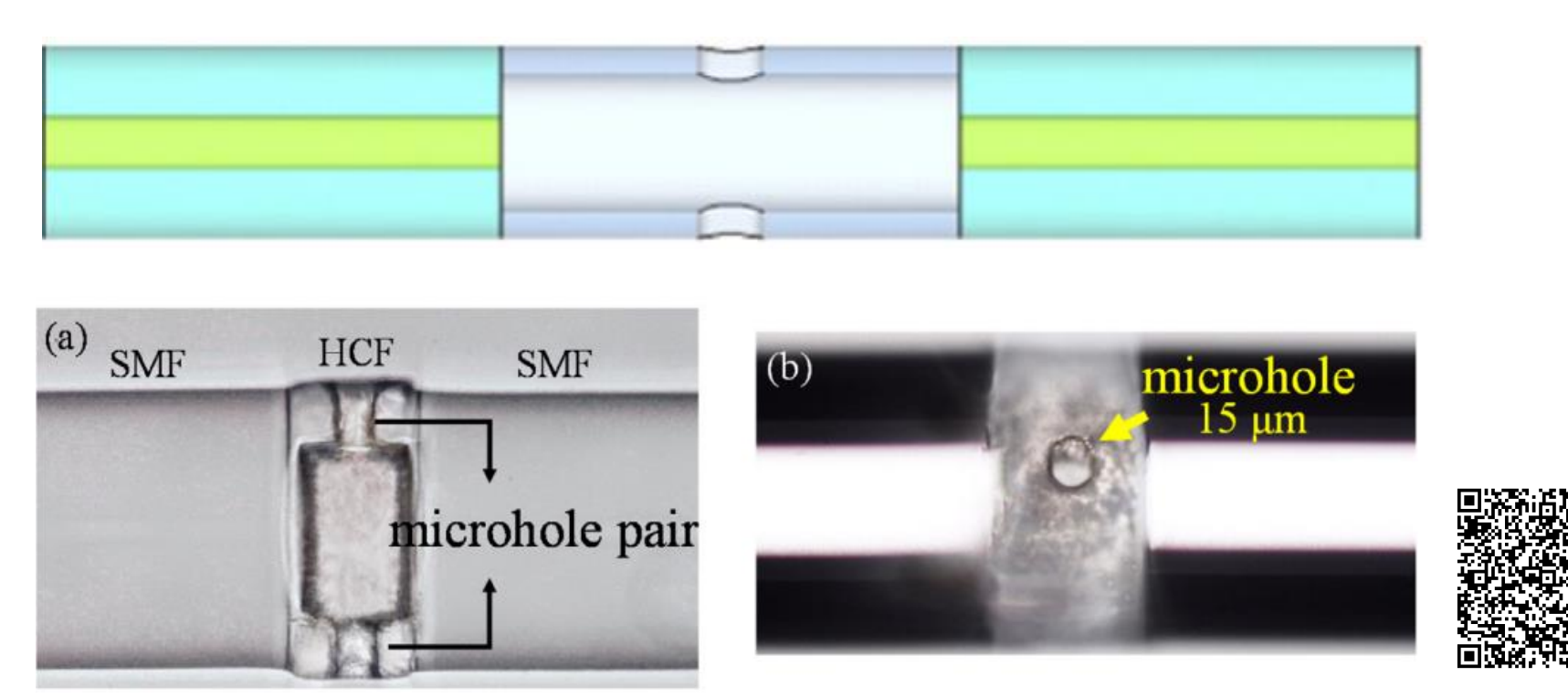
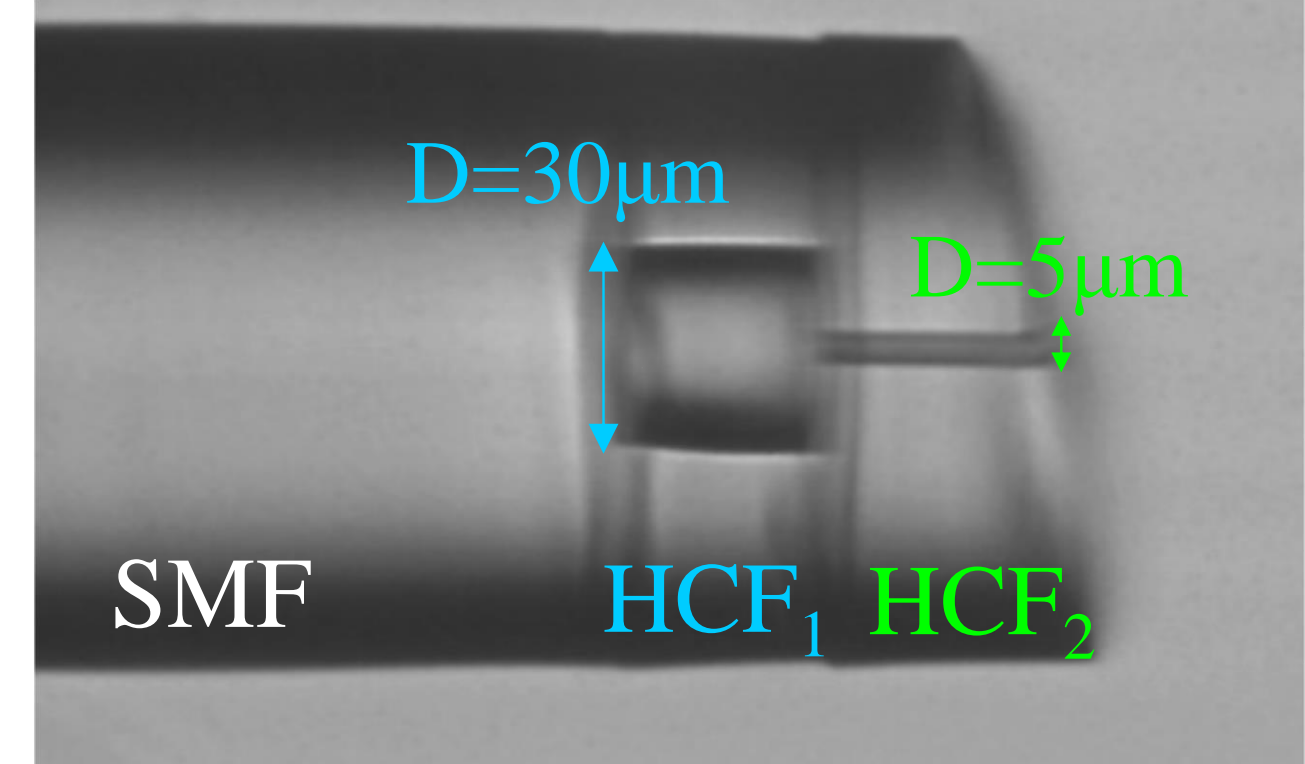
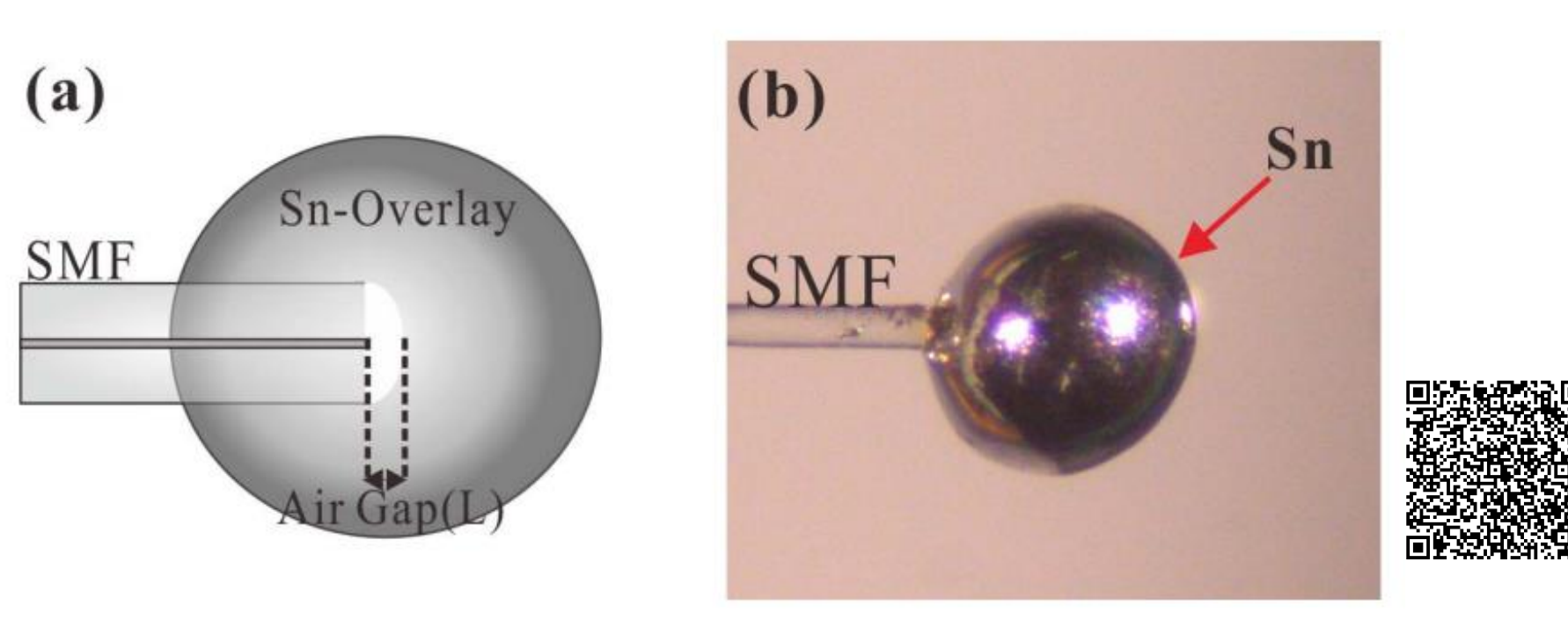
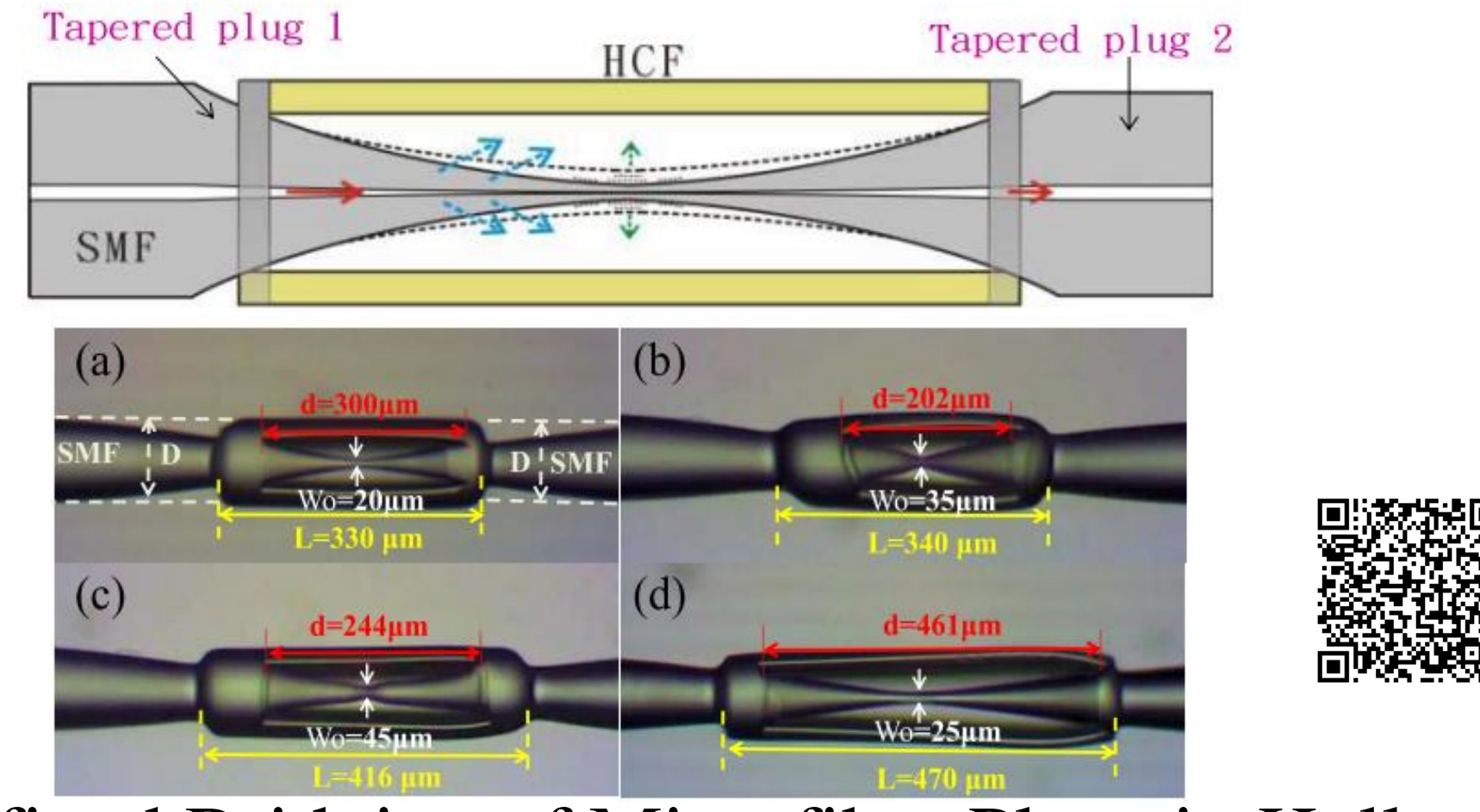
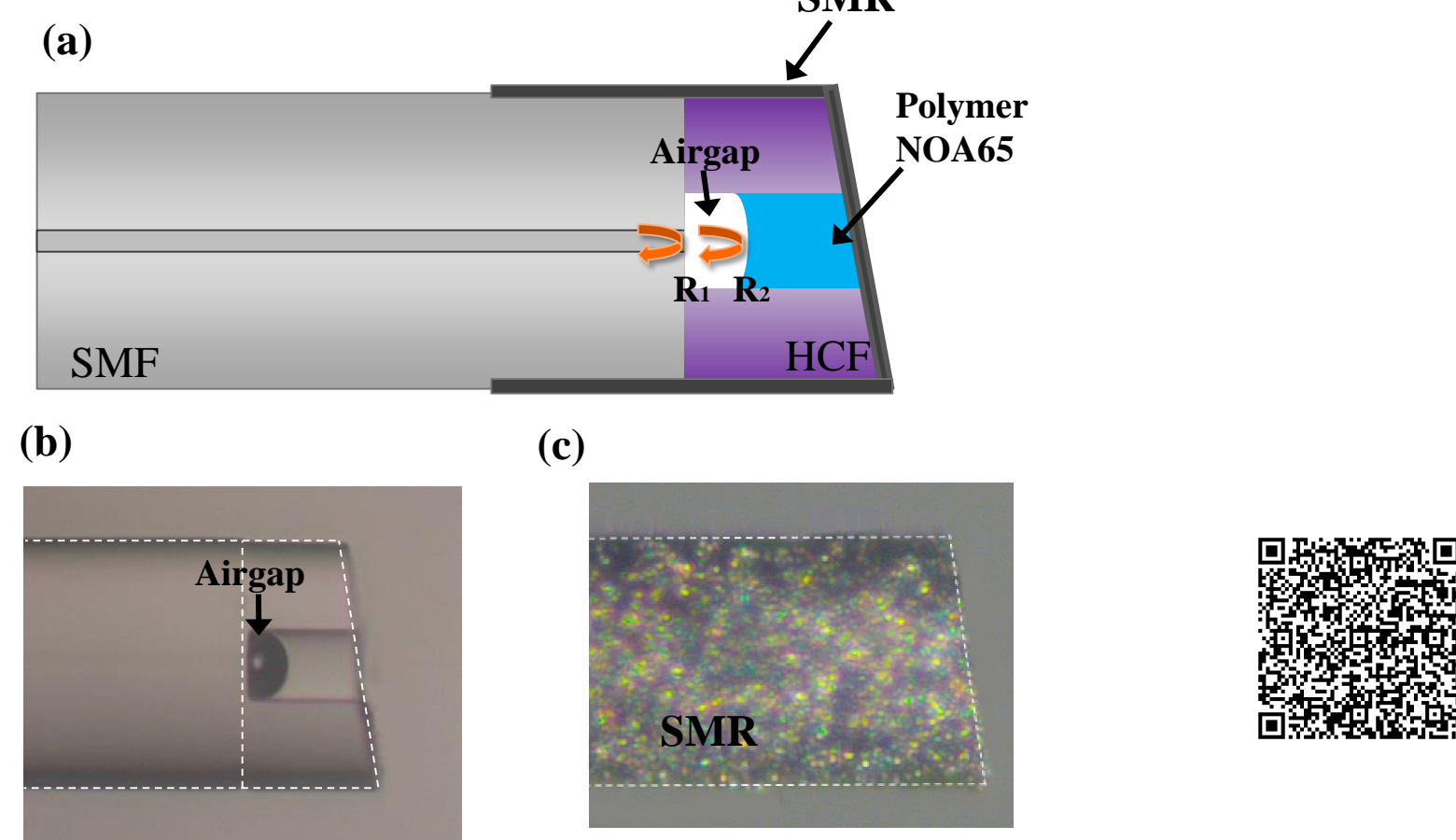
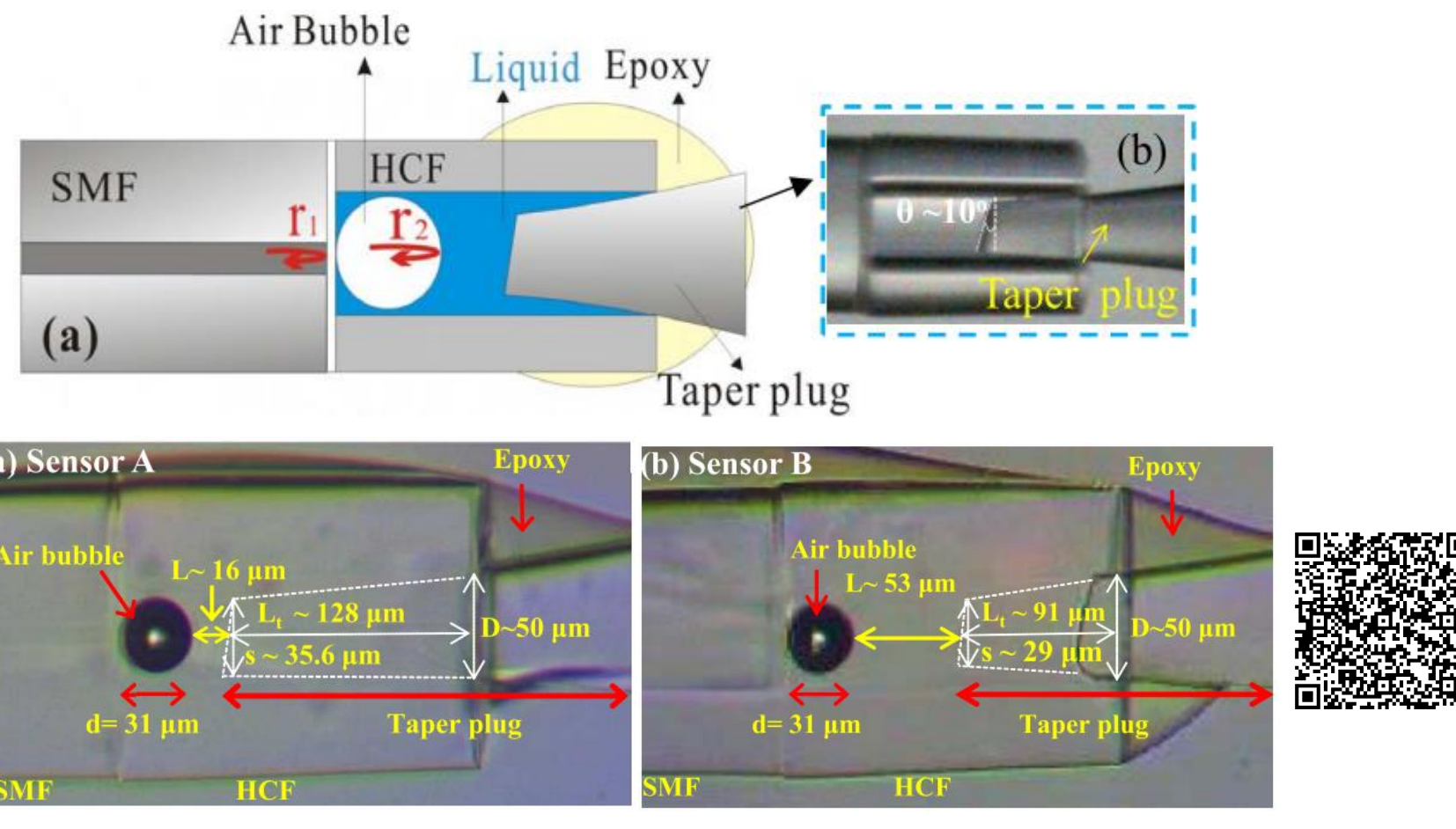
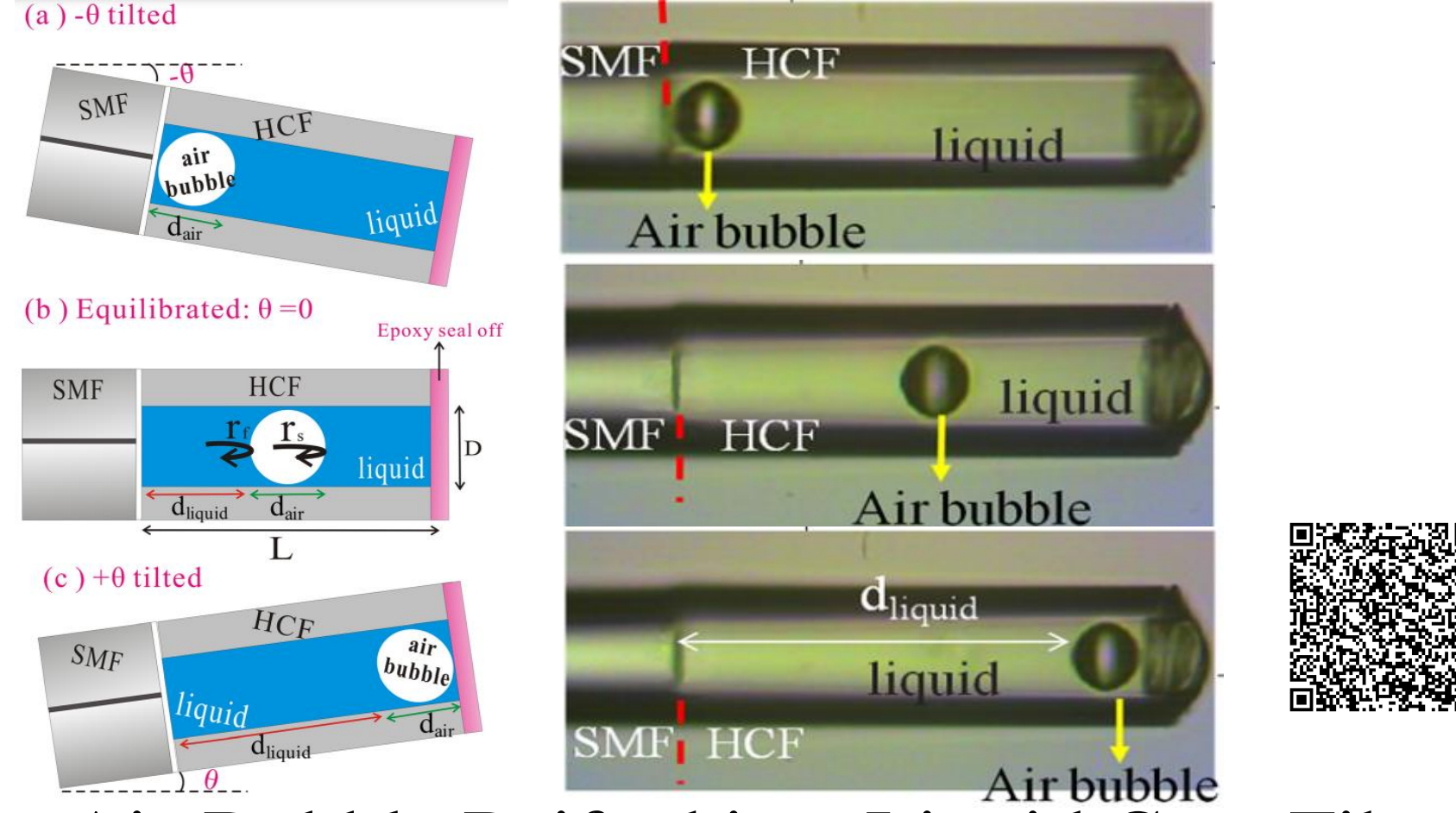
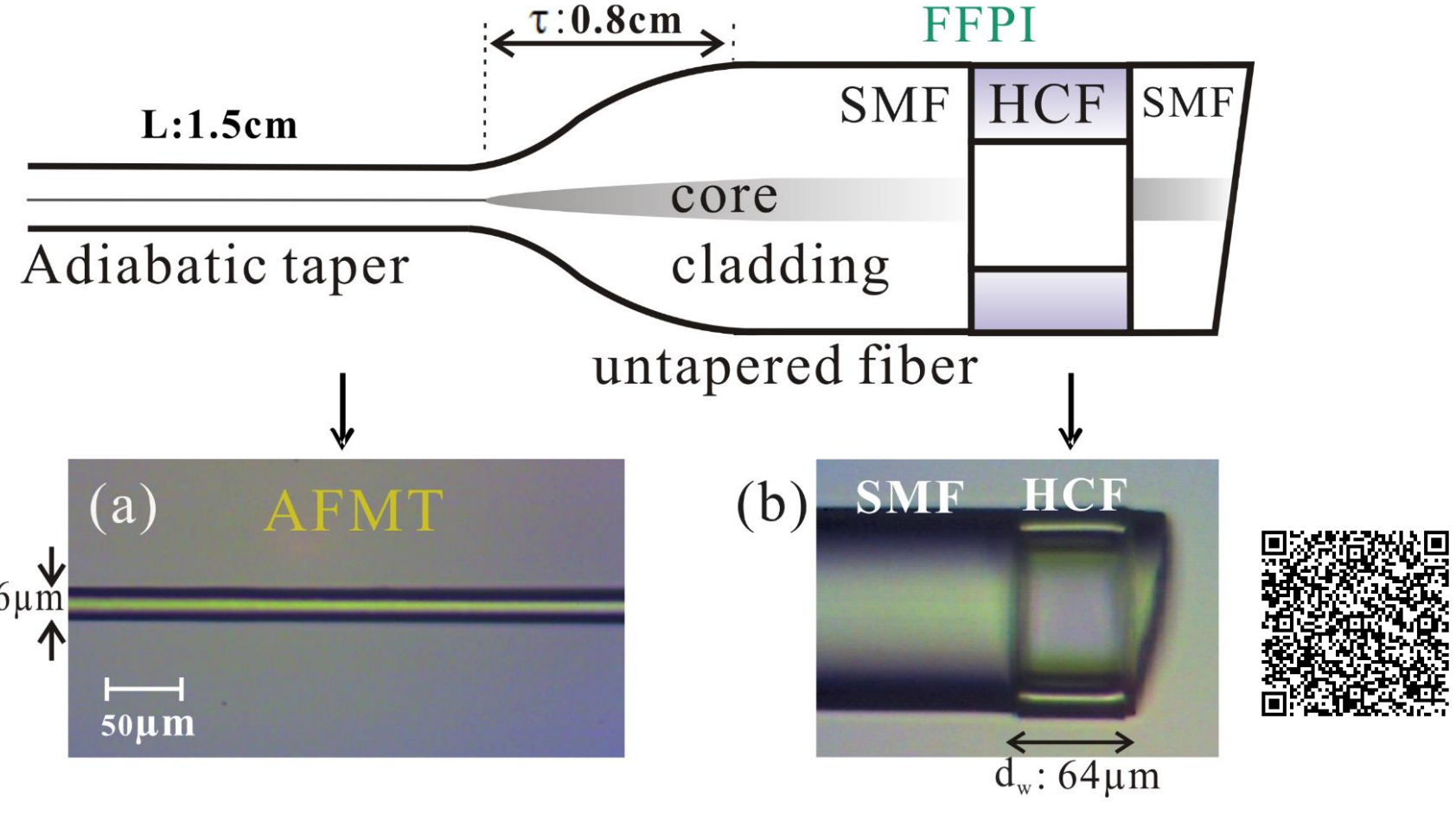
介紹：本實驗室成立於2004年，在十幾年科技部不間斷之研究經費補助下，購進許多光通訊光源及製作光纖感測元件設備以及量測儀器等（如下）。實驗室主要研究項目包括：開發各類新穎、微型以及高靈敏全光纖式干涉儀、光纖元件之設計與其特性分析及元件感測特性量測等，我們也進行所發展之元件的光束傳播與光場與模態模擬分析研究，實現完整性之研究與探討，歡迎有興趣的同學加入本實驗團隊。

主要研究方向：1. 微型光纖元件製作與特性量測 2. 新穎光纖感測器 3. 光波導元件設計 4. 理論模擬與分析

實驗室主要設備

 <p>FSM60S FSM100M+</p> <p>Fujikura 精密光纖熔接機</p>	 <p>溫度控制器TE Cooler</p>	 <p>Advantest Q8381A光譜分析儀</p>
 <p>GIP 超寬頻光源</p>	 <p>OLYMPUS BX51顯微鏡</p>	 <p>CCD光學影像分析儀</p>
 <p>THORLABS CLD101x 1550nm LD</p>	 <p>980nm pumping LD</p>	 <p>精密濕度溫度控制箱</p>

實驗室重要研究成果

 <p>FBG Polymer Au film (a) L=250 μm d=31 μm (b) L=160 μm d=52 μm</p> <p>Sensor A Sensor B</p> <p>Tapered Polymer Fiber Inclinometers</p>	 <p>(a) SMF HCF SMF (b) microhole 15 μm microhole pair</p> <p>Laser Machining Microhole Hollow Core Fiber Fabry-Pérot Interferometer</p>	 <p>D=30 μm D=5 μm SMF HCF₁ HCF₂</p> <p>Dual hollow core fiber-based Fabry-Pérot interferometer</p>
 <p>(a) SMF Sn-Overlay Air Gap(L) (b) SMF Sn</p> <p>Sn-Microsphere Airgap Fiber Fabry-Pérot Interferometer</p>	 <p>Tapered plug 1 HCF Tapered plug 2 (a) d=300 μm L=330 μm W=20 μm (b) d=202 μm L=340 μm W=35 μm (c) d=244 μm L=416 μm W=45 μm (d) d=461 μm L=470 μm W=25 μm</p> <p>Refined Bridging of Microfiber Plugs in Hollow Core Fiber</p>	 <p>(a) SMF Airgap Polymer NOA65 R₁ R₂ HCF (b) Airgap (c) SMR</p> <p>Chemical modified fiber Fabry-Pérot interferometer</p>
 <p>(a) Air Bubble Liquid Epoxy (b) Taper plug (a) Sensor A L=16 μm L₁=128 μm L₂=55 μm d=31 μm (b) Sensor B L=53 μm L₁=91 μm L₂=29 μm d=31 μm</p> <p>Air-Bubbles/Liquid in Hollow Core Fibers</p>	 <p>(a) -θ tilted (b) Equilibrated: θ=0 (c) +θ tilted</p> <p>SMF HCF liquid Air bubble SMF HCF liquid Air bubble SMF HCF liquid Air bubble</p> <p>Micro-Air-Bubble Drifted in a Liquid Core Fiber Fabry-Pérot Interferometer</p>	 <p>L:1.5cm τ:0.8cm Adiabatic taper core cladding untapered fiber (a) AFMT d_{in}:26 μm (b) SMF HCF d_c:64 μm</p> <p>Adiabatic fiber microtaper+FFPI</p>