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## **【131】 $\mu$ -fluidic sensing with a quantum cascade lab-on-a-chip**

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The mid-infrared spectral region is referred to as fingerprint region since molecules have their unique fundamental absorption features there. Addressing this optical regime, quantum cascade technology provides innovative optoelectronic devices to significantly improve integration and performance in chemical sensing. In this work, we present a room-temperature monolithically-integrated quantum cascade laser detector device for on-chip liquid-sensing of  $\mu$ l-samples, with a footprint smaller than a ping-pong ball. A surface plasmon polariton waveguide connecting laser and detector enables high coupling efficiencies and maximizes the interaction volume with the surrounding analyte. Concentration-dependent absorption, rapid-response and long-term-stability measurements are shown in the first proof-of-principle experiments.

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