

세미나 초록

성명	정원종
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발표 주제	신속 바이러스 검출을 위한 디지털 유전자 분석 플랫폼
발표 내용	<p>This seminar presents a rapid virus detection method utilizing the photonic digital gene analysis with a microfluidic device. Among the various advantages of digital PCR (polymerase chain reaction), digital partitioning with nano-scale volume in the PCR chamber greatly enhances the accuracy of gene analysis by efficiently concentrating and self-purifying the target gene in the sample solution. The isolated microenvironment enables precise quantification of target gene without calibration curves, improving the accuracy even at low viral loads. Additionally, the incorporation of photonic non-contact heating with a photo-thermal layer on the digital PCR microfluidic device significantly reduces the PCR cycling time by minimizing the total thermal mass, ensuring the reliable and reproducible gene analysis results throughout PCR. This synergistic approach, combining digital partitioning in digital PCR and photonic non-contact heating in photonic PCR, provides a rapid, simple, and cost-effective gene analysis platform for the daily virus monitoring and future pandemics.</p>