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标题: Detection of ultrafast laser ablation using quantum cascade laser-based sensing
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摘要: The impact of quantum cascade lasers (QCLs) intrinsically high sensitivity to external optical feedback intended for sensing applications such as in-line ablation rate measurements is experimentally demonstrated. We developed a QCL-based sensor to assess the voltage modulation at the laser terminals induced by fast displacement of the ablation front during the process. This work shows that the detection range of our diagnostic system is only limited by the emission wavelength of the QCL probe source and the capability to measure ablation rates as high as 160 nm/pulse was reported. This sensing technique can be employed with the whole class of quantum cascade lasers, whose emission spans from mid-IR to THz spectral region, thus enabling the extension of its applications to ultra-fast laser ablation processes. (C) 2012 American Institute of Physics. [http://dx.doi.org/10.1063/1.4764115]
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