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Ultrafast Time Resolved Reflection High-Energy Electron Diffraction Study of Laser-Matter Interactions for Silicon[1] HYUK PARK, J.M. ZUO, Dept. of Materials Science and Engineering and Materials Research Laboratory, University of Illinois at Urbana-Champaign — We report a study of silicon surface using ultrafast time-resolved reflection high energy electron diffraction (RHEED) based on the pump-probe approach. The probe beam is an electron pulse generated by a femtosecond laser, accelerated to 30 kV and focused by a magnetic lens. Using this probe, we investigated the pulse laser interaction with silicon by monitoring the electron diffraction pattern recorded in the glancing angle geometry. We observed transient angle-dependent electron beam deflection from silicon surfaces. We show that the electron beam deflection comes the change in surface potential and charge produced by laser-matter interaction.

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Jian-Min Zuo
Dept. of Materials Science and Engineering,
University of Illinois at Urbana-Champaign

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