

Abstract Submitted
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TOF measurements of He and D₂ molecules scattered from clean and H-covered Si(100) surfaces.¹ S. UENO, A.R. KHAN, Y. KIHARA, S. SATO, Y. NARITA, A. NAMIKI, TOF TEAM — Angular distribution of He or H₂ (D₂) scattered from Si(100) surfaces has been found to be broad. In case of H₂, such a broad scattering was considered as evidence of physisorption. Our aim is to know whether light atoms and molecules such as He or D₂ are physisorbed upon collision with Si (100) surfaces. Using 300 K effusive beam, we measured Time-Of-Flight (TOF) distributions of He and D₂ molecules scattered from clean and H-terminated Si(100) surfaces at surface temperature $T_s = 300$ and 600 K. We found that for $T_s = 300$ K the scattered He atoms show a Maxwellian velocity distribution characterized with translational temperature of $T_t=300$ K. At $T_s = 600$ K, on the other hand, the net increase in translational temperature was found to be very small, about 340 K. Similar results were also found on the H-terminated surfaces. These results indicate that the scattered atoms or molecules have not accommodated with the surface, suggesting physisorption does not take place.

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