Kim et al. Reply: We investigated the kinetic roughening of sputter-eroded Pd(001) surface experimentally and also introduced a dynamic equation to illustrate the pattern formation thereof [1]. A term of the form $\nabla^2(\nabla h)^2$ was derived by extending the Kuramoto-Sivashinsky equation into higher order, addressing the necessity of the higher order term for the first time. In the preceding Comment [2], however, Castro and Cuerno pointed out that Eq. (1) of Ref. [1] is not relevant to the mound-like pattern formation for $\lambda_1 < 0$ and $\lambda_2 > 0$, which we obtained via the TRIM Monte Carlo simulations. From the explicit functional form of λ_1, unseen in our previous Letter,

$$\lambda_1 = \frac{1}{2}\left(\frac{\mu}{a}\right)^2 \left[\left(\frac{a}{\sigma}\right)^2 - \left(\frac{a}{\sigma}\right)^4 - \left(\frac{a}{\mu}\right)^2\right], \qquad (1)$$

it is hardly possible to have positive λ_1 unless the longitudinal cascading σ exceeds the penetration depth a, which is not the case realizable in the simulation for the experimented bombarding ion energies, 0.5 to 2.0 keV. On the other hand, it is noteworthy that recent experiments on Ag(001) surface produce hole-like patterns [4] even though Ag and Pd have similar atomic numbers and the same crystal structure, and thus the simulated results are almost the same [5]. Therefore, it is still an open question to determine whether the mound-like patterns on Pd(001) are a transient behavior, and so the hole-like patterns emerge in the long sputter-time limit. Possibilities include other surface restructuring mechanisms than are captured by the extended Kuramoto-Sivashinsky equation [6]. In short, Eq. (1) in [1] is more relevant to the hole-type pattern formation, and many theoretical features including asymptotic behavior of the dynamic equation still remain to be investigated.

In [1], it was attributed to the facet formation that the roughness exponent α is set to be ≈ 1. But, in the Comment, it is argued not to be consistent with the numerical simulation results, $\alpha \approx 0.9$ in [7]. In fact, as shown in [7], α increases with increasing system size and is likely to saturate to $\alpha \approx 0.9$. Nevertheless, since the numerical estimation is based on finite-size systems, it is not clear what the value is in the thermodynamic limit. Thus, it is worthwhile to check through renormalization group approach if Eq. (1) of [1] generates a new universality class other than the Lai and Das Sarma one [8] when λ_1 is sufficiently small but not zero. Finally, we note that a dynamic equation for sputter-eroded surface was derived through a different procedure, which also contains the higher order term [9].

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