PiAI Seminar Series: Physics informed AI in Plasma Science
10:00-10:30, 20 April 2020 (CEST:UTC+2)
17:00-17:30, 20 April 2020 (JST:UTC+9)
Web Seminar

Prediction of Physical Sputtering Yields for New Materials and an Understanding of Underlying Physics by Machine Learning

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In this study, we construct a regression model for the sputtering yields of single-element materials by single-element ion impact, using widely available sputtering yield data [1], and evaluate its accuracy in predicting the sputtering yields and the importance of each descriptor (i.e., physical parameter associated with the system), based on exhaustive search [2] and a subgroup relevance analysis [3]. The analysis of the important descriptor groups also provides insight into the physical mechanisms of such sputtering phenomena.

[1] Y. Yamamura and H. Tawara, Atomic Data and Nuclear Data Tables 62, 149-253 (1996).
[2] K. Nagata, J. Kitazono, S. Nakajima, S. Eifuku, R. Tamura and M. Okada, IPSJ Online Transactions 8, 25 (2015).
[3] H. C. Dam, V. C. Nguyen, T. L.Pham, A.T. Nguyen, K. Terakura, T. Miyake and H. Kino, J. Phys. Soc. Jpn 87, 113801 (2018).