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APPLICATION OF MACHINE LEARNING IN SINGLE CRYSTAL GROWTH

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Development of a new material with required properties is a very complex task. Theoretical models for growth procedure are usually not available, at least at the beginning. Therefore, many attempts are made to achieve required properties of the material and many characterization datasets are obtained. However, the way how the physical properties of the material are affected by the growth conditions does not have to be straightforwardly evident. For such a case, machine learning can be very helpful. In this contribution, applications of several simple machine learning approaches are applied to the development process of the InGaN/GaN scintillator structure. A properly trained neural network is capable to predict luminescence properties from the growth parameters of the structure. This enables optimization of the growth parameters from empirical data only. On the other hand, understanding of underlying physics is not guaranteed but the predictions of the model can give a clue.

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