



**Title:** An AlGaIn/GaN HEMT Compact Model with Field-plates Structure for The Purpose of Process Modifications

**Abstract:** Usually, technology computer-aided design (T-CAD) simulation has been employed for the initial developments and/or modifications of a GaN HEMT process. Before employing the T-CAD simulations, T-CAD calibration with device measurements of test structures must be carefully performed. Since the procedure needs huge time and efforts, limited number of manufacturers obtain the good simulation accuracy. TCAD simulation is not a compact tool for every process and device engineers.

A compact model which is validated with respect to T-CAD simulations can predict the impact of the technology on the device characteristic for the process modifications. In addition, the model can be used for circuit simulations in static and dynamic performances.

In this study, a T-CAD compatible compact model for AlGaIn/GaN HEMTs will be proposed. The model consists of École Polytechnique Fédérale de Lausanne (EPFL)-HEMT version 3.0 model, source field-plate, gate drain/source leakage, and parasitic component models. As the model has been verified with TCAD simulations, some experiments will be shown in the presentation.