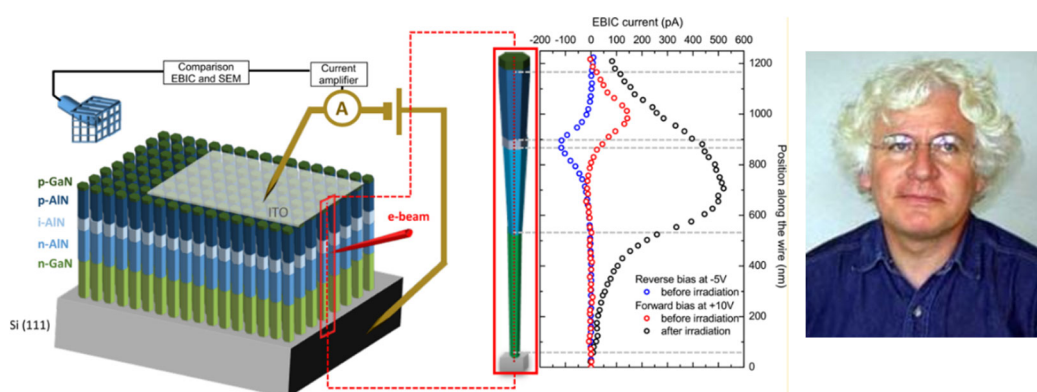


日時：3月18日 15:00-16:00

場所：3F800

3月18日に、フランス国立科学研究センター（CNRS）・ネール（NEEL）研究所の Bruno Daudin 博士が来学されます。この機会を利用して TREMS・物理工学域セミナーを実施して頂くことになりました。Daudin 博士は、NEEL 研究所の窒化物半導体研究グループのリーダーで、特に、窒化物半導体をナノメートル程度の直径の円柱形状（ナノワイヤー）で成長させることにより、その発光効率を飛躍的に増大させる技術を開発されていることで著名な研究者です。セミナーでは、本手法の詳細と最新の成果に加えて、グルノーブルの研究状況、筑波大学との共同研究の可能性等についても講演頂きます。是非ご参加ください。

世話人：数理物質系 上殿明良 (uedono.akira.gb@u.tsukuba.ac.jp)



## Abstract

### Nitride Nanowires for next generation of visible and UV light emitting devices

Nitride nanowires (NWs) are a subject of current interest boosted by their remarkable structural and optical properties. As concerns the realization of visible light emitting devices (LEDs), more In can be incorporated in NW InGaN/GaN heterostructures, taking advantage of their eased strain relaxation associated with the large amount of free surface intrinsic to NW geometry. This leads to a reduction of both defect concentration and quantum confined Stark effect, opening the way to close the so-called “green gap” and to realize red emitting LEDs. Moreover, the specific doping mechanism of NWs, characterized by a higher dopant solubility limit than in their 2D layer counterparts makes them particularly attractive for the realization of deep UV LEDs, usually plagued by the poor p-type level achieved in AlGaIn material with a high AlN molar fraction.

In this talk, I will describe the molecular beam epitaxy growth mechanism of NWs and of NW heterostructures for visible and UV LEDs applications. I will discuss their structural, optical and electrical transport properties, emphasizing in more details the potential of NWs to realize UV LEDs emitting in the 250-300 nm range.

A.M. Siladie et al, *Nano Letters* 2019, 19, 12, 8357-8364

Z. Fang et al, *Nano Letters* 2015, 15, 10, 6794-6801

A.M. Siladie et al, *Nanotechnology*, **29**, 255706 (2018)