

DS 25: Gaede Prize Talk (jointly with O)

Time: Tuesday 15:30–16:00

Location: WIL C307

Invited Talk

DS 25.1 Tue 15:30 WIL C307

STM-induced light emission: from molecular LED to sub-nanometric optical microscopy. — ●GUILLAUME SCHULL — Institut de Physique et Chimie des Matériaux de Strasbourg, UMR 7504 (CNRS - Université de Strasbourg), Strasbourg, France

The electric current traversing the junction of a scanning tunneling microscope (STM) may generate a local emission of light. During the last years, we have used this method to study the intrinsic luminescence properties of individual molecules. This work has progressed in two

directions. On one side we have used the ability of the STM to manipulate matter with atomic-scale precision to form single-molecule light emitting devices. Composed by individual molecular wires suspended between the tip and the sample of the STM, these devices generate an emission of light whose color, intensity and bandwidth can be controlled with high precision. On the other side, we used the intrinsic resolution of the STM to performed sub-molecularly resolved vibronic spectroscopy of molecules separated from a metallic surfaces by a thin insulating layers. These results constitute an important step towards photonic measurements with atoms-scale resolution.