

Inprentus Awarded Contract to Provide Premium Diffraction Gratings to Brookhaven National Laboratory's IOS Upgrade

Inprentus was chosen from a competitive bid where it highlighted the ability to deliver gratings with value engineering and a fast turnaround.

CHAMPAIGN, IL, UNITED STATES,
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[Inprentus](#) has been awarded a contract
by Brookhaven National Laboratory's

(BNL) National Synchrotron Light Source-II (NSLS-II) to provide three ultra-high vacuum (UHV) compatible, soft X-ray Variable Line Spacing [Blazed Gratings](#), for a new energy loss spectrometer (INSPIRE) for the IOS beamline. Inprentus was chosen from a competitive bid where it



“

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*Subha Kumar, Chief
Operating Officer of Inprentus*

highlighted the ability to deliver gratings with value engineering and a fast turnaround. “The fast delivery time really sets Inprentus apart. It turns out to be an important advantage from a project risk management perspective for our customers” says Jeff MacDonald, interim-CEO of Inprentus.

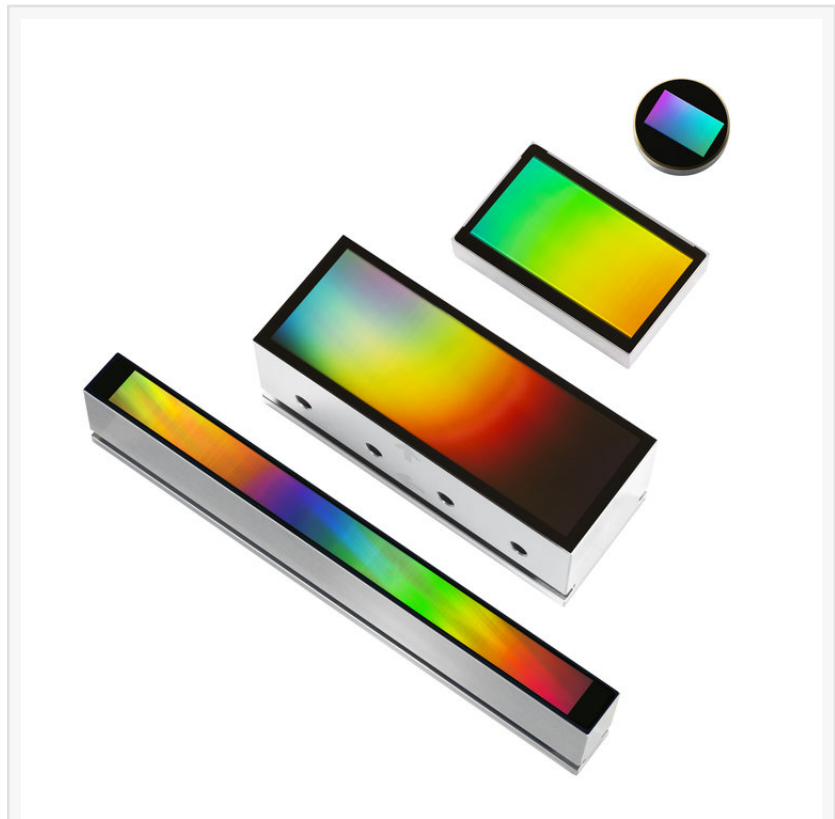
NSLS-II is one of the newest and most advanced synchrotron facilities in the world. It is a third-generation synchrotron light source that has a highly optimized 3 GeV electron storage ring and experimental beamlines and

optics. NSLS-II provides researchers with extremely bright, highly stable X-rays at nanoscale resolution to study the atomic, chemical, and electronic structure of materials across various scientific disciplines.

The INSPIRE (Inelastic Scattering, Photoemission, and Infrared Endstation) is a planned long-term upgrade expansion of the IOS beamline. The In situ and Operando Soft X-ray Spectroscopy (IOS) beamline offers researchers advanced spectroscopic tools for in situ studies on energy materials, such as heterogeneous catalysts, electrocatalysts, batteries, and fuel cells as well as other materials, in real conditions such as elevated pressure or electrochemical operating

conditions. This offers a powerful capability to correlate chemical and electronic information with materials functionality, which is crucial for establishing principles for novel materials design.

In addition to fast delivery time, Inprentus' diffraction gratings were chosen for the project for a variety of premium specifications designed to optimize beamline performance like varied line spacing, high efficiency and high resolving power, including the ability to meet stringent ultra-high vacuum (UHV) requirements of such optics. Inprentus manufactures gratings with line densities between 50-6000 lines per mm, blaze angles as low as 0.1-degree, variable line spacing (VLS), high damage threshold, and sizes up to 500 mm in length. Inprentus scientists provide simulation services to provide reliable predictions of in-beamline efficiency.



Premium Blazed Diffraction Gratings Manufactured by Inprentus

"Inprentus blazed gratings are becoming the gold standard for facility upgrade at 3rd and 4th generation synchrotrons all over the world." said Subha Kumar, Inprentus COO. "To perform top-notch science at these light sources, you need to be able to capture every possible photon generated by the source for your experiment. Inprentus' high efficiency blazed gratings are highly preferred as they allow you to capture the maximum light possible for results you can trust."

Inprentus Inc.

Inprentus was founded in June 2012 by University of Illinois Urbana-Champaign physics professor Peter Abbamonte to commercialize an innovative, dual-atomic microscope scribing technology, which is a technique for carrying out nano-scale lithography via mechanical deformation of metallic surfaces. This technology is a general purpose approach to high-precision patterning of surfaces, and is particularly suited diffractive optics in which features must be shaped with 0.1-degree angular precision and positioned with nanometer precision over distances of tens of centimeters.

Inprentus aims to apply 21st century mechanical ruling to solve critical current and future

grating-centered challenges. We are committed to excellence, risk, and pushing boundaries by providing state of the art blazed gratings that perform to unprecedented specifications and that enable novel applications. Outcomes include next-generation monochromators, spectrometers, laser systems, and analytical instrumentation in defense applications, as well as ground-breaking consumer experiences enabled by improvements in chip manufacturing and see-through AR waveguides. Inprentus is dedicated to facilitating next-level science and technology by continually enhancing our capabilities with cutting-edge developments, collaborations, and partnerships.

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