Project number	**MSCA-ITN-2014-ETN 641272**
Project title	**High-intensity coherent nonlinear optics (HICONO)**
Title	**Fellow's report on activities :** **Conferences :** **OSA Imaging & applied optics (July 2016, Heidelberg)** **CLEO Europe (June 2017, Munich)** **Coherent X-Ray Imaging (May 2017, Oxford)** **(2016, 2017)**
Report status & date	**Version 1 (10.07.2017)**
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I attended three conferences within the first year as a HICONO ESR. From the 25th to the 28th July 2016, I attended the *OSA imaging and applied optics congress* in Heidelberg/Germany. Furthermore, in 2017 I contributed with a poster presentation of my research project to two conferences namely the *CLEO Europe conference* which took place from 25th to the 29th June 2017 in Munich/Germany as well as to the *Oxford Coherent X-Ray Imaging with High-Harmonic Sources Workshop* in May 2017.

Goal: The annual *OSA imaging and applied optics congress* is organized by the optical society of America and covers fields such as Laser Applications to Chemical, Security and Environmental Analysis, mathematics in imaging, computational optical sensing and imaging and digital holography. It is an international conference which is aimed at scientists and engineers across the globe. As this was my first optics conference, my goal was mainly to get a general overview of the field.

The *CLEO Europe congress* mainly aims at EU scientists working in the field of optics. My goal was to present my work to a broad scientific audience and establish possible co-operations with other leading groups working in the field of nonlinear optics and laser development.

The *Oxford Coherent X-Ray Imaging with High-Harmonic Sources Workshop* is an event which brings together scientists from Europe and the U.S. which work on imaging

applications of high-harmonic sources. My goal was to learn about different coherent imaging techniques and present the results of my experimental work in this context.

Impact: By end of July 2016 not sufficient experimental data was accumulated for a formal presentation of my current research project on the development of a coherent extreme-ultraviolet (XUV) light source. However, I was able to outline possible application of such a light source to coherent imaging with researchers working in this field.

CLEO Europe is one of the most renowned optics conferences in Europe for researchers to present their work. The conference is attended mainly by European scientists from the field of applied physics, optical engineering and applications of photonics and laser technology. As this conference brings together numerous researchers from those different fields, it constituted an excellent platform to present my project and the experimental results to a broad scientific audience. This conference had a high impact on my work as it gave me the opportunity to establish contacts with other scientists and engineers working on related projects and on laser source development which has a high significance for my future work.

The *Oxford Coherent X-Ray Imaging with High-Harmonic Sources Workshop* provided me with first-hand, detailed insight on established imaging techniques such as ptychography or Fourier-transform holography that have been done in the past with high-harmonic sources.

Methodology: The program of the *OSA imaging and applied optics congress* was structured in eight main meetings on topics listed above of which each consisted of 20-30 sessions of approx. 5-10 talks distributed on four days. For the first half of the conference I focussed on talks on digital holographic microscopy and Laser Applications to Chemical, Security and Environmental Analysis, whereas I focussed on talks on beam shaping techniques and light analysis during the second half of the conference, as these two topics are of major importance for my future work as a HICONO ESR. Towards the end of the conference, I joined a river cruise tour with other conference attendees, which represented a very good networking opportunity.

CLEO Europe was a congress on a larger scale compared to the conference in Heidelberg described above. The conference comprised more than 200 sessions consisting of about 5 talks per session which covered topics from high intensity lasers to single photon sources. The conference started on Sunday the 25th June 2016 when I presented my poster during the poster session “CG-P.14”. This poster session lasted one hour while other conference attendees were able to ask questions about my project.

On first three days of the conference, I focussed on talk concerning topics such as “XUV generation and applications” and “high-harmonic generation in solids”. During the remaining two days, I also attended talks on laser material processing and high power fibre lasers.

The *Oxford Coherent X-Ray Imaging with High-Harmonic Sources Workshop* lasted three days and included talks on specific imaging applications as well as a one-hour poster session in which I presented my experimental results as a poster and answered questions.