1. Student Chapter Information

Name: Aston University Chapter

Address: Aston St, Birmingham B4 7ET, United Kingdom

Established: 17 August 2012

Total Current Member: 10

Other incorporated chapter: OSA student chapter

Chapter advisor: Prof David Webb

Current chapter officers:

President  Teerawat Piromjitpong  piromjit@aston.ac.uk
Vice President  Anastasiia Vasylchenkova  vasylcha@aston.ac.uk
Secretary  Yang Lu  luy12@aston.ac.uk
Treasurer  Steffan Walters  walters2@aston.ac.uk

Other chapter members:

Abdallah Ali  aliaai@aston.ac.uk
Nasir Garba Bello  bellong@aston.ac.uk
Changle Wang  wangc15@aston.ac.uk
Auro Michele Perego  peregoa@aston.ac.uk
Maria Zandi  zandima@aston.ac.uk
Namita Sahoo  sahoon@aston.ac.uk
2. Activities in 2018 – chronicle order

2.1 UK Young Scientists and Engineers (Big Bang) Fair

Date: 13-16\textsuperscript{th} March, 2018

Time: 9:00 – 16:00

Location: National Exhibition Centre (NEC), Birmingham, UK

Type of Event: Outreach

Participants: approximately 80-150 young students visited per day

Details: Our chapter officers joined one of Aston University stands to demonstrate and educate young students who came to the fair. The content of this stand was to showcase the laser musical instruments that had been made by Aston MSc students. The participants had an opportunity to assembly this instrument from the beginning steps, and to test it with different programing codes that alternated the output musical sounds.

Fig. Chapter officers participated this activity as staffs and demonstrators at the stand of Aston University
Fig. Young students came to play and study our laser musical instruments. Some gifts and information brochures were distributed to them.
2.2 SPIE Travelling Lecturer

Date: 23rd March, 2018
Time: 13:30 – 14:30
Location: Aston University, Birmingham, UK
Type of Event: Lecture
Participants: 25 PhD students and academic staffs
Lecturer: Prof. Mauro F. Pereira

Lecture topic: GHZ-THz-MIR Sources and Nonlinearities

Lecture abstract: Intersubband lasers, such as Quantum Cascade Lasers (QCLs), are the prime sources for coherent radiation in the Mid-Infrared (MIR). All gases and bio-materials of increasingly interest for both basic science and applications. Detection of mixes of different gases with high sensitivity require a narrow laser linewidth, which can be strongly influenced by the linewidth enhancement (α-factor) due to fluctuations in the refractive index induced by carrier fluctuations. The α-factor of intersubband lasers was initially expected to be zero. However, values ranging from -0.5 to 3 have been found experimentally. Evolving from the MIR to the THz and GHZ ranges, the talk introduces a concept to study nonlinear optics through controllable nonlinearities in semiconductor superlattices. A fully predictive microscopic Nonequilibrium Green's Functions approach is used to deliver input to a relaxation-rate approximation approach leading to fully analytical expressions for the nonlinear polarization at arbitrary orders. These results open the possibility of extending the whole field of nonlinear optics to the GHZ-THz range.
Fig. Prof. Pereira and chapter officers

Fig. Audiences in the lecture room were provided with light refreshments.
2.3 University Open Day: Laser Measurement Demonstration

Date: 13\textsuperscript{th} June, 2018

Time: 12:00 – 13:00

Location: Aston University, Birmingham, UK

Type of Event: Outreach

Participants: 50 students from local high-schools

Details: In an open-day of Aston University, we joined our academic staffs to arrange an activity session that demonstrated how to observe and use the laser diffraction patterns of hair and wires for their thickness measurement. Students who participated had a chance to do this experiment by themself and reported their results in the given assignment sheets. Our chapter officers were responsible for the equipment preparations, and experiment demonstrations.

Fig. Chapter officers designed and prepared the equipment, and were the demonstrators.
2.4 Annual Chapter Member Meeting and Party

Date: in October, 2018

Location: Aston University, Birmingham, UK

Type of Event: Meeting

Participants: Members of student chapters and also some students who would like to become new members.

Details: We will arrange one pizza party for all postgraduate students in our institute in the fall semester. The main aim is to encourage them to apply or renew their SPIE membership. It will be also a good chance for all members to exchange their opinions and ideas for the past and the future student chapter activities.
2.5 SPIE Student Chapter Leadership Workshop

Date: 18-19th August, 2018

Representative: Teerawat Piromjitpong

Poster:
2.6 OSA Travelling Lecturer

**Date:** 28th November, 2018

**Time:** 13:30 – 14:30

**Location:** Aston University, Birmingham, UK

**Type of Event:** Lecture

**Participants:** 25-35 PhD students and academic staffs

**Lecturer:** Dr Aline Dinkelaker

**Lecture topic:** Technical talks based on lecturer’s research

**Lecture abstract:** Not yet available

3. Financial Details

**Income**

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<th>Amount</th>
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<tr>
<td>04/12/2017</td>
<td>2017 remaining budget</td>
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<td>21/02/2018</td>
<td>2018 SPIE activity grant</td>
<td>£348.41</td>
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<td>2018 OSA activity grant</td>
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<td>07/08/2018</td>
<td>Membership half-fee support</td>
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**Spent**

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<tr>
<td>23/03/2018</td>
<td>Lecture catering</td>
<td>£132.48</td>
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<td>xx/10/2018</td>
<td>Annual member meeting</td>
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<td>28/11/2018</td>
<td>Lecture catering</td>
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<tr>
<td>07/08/2018</td>
<td>Membership half-fee support</td>
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**Balance**

Available for next year activities £264.57
4. Conclusion

Aston University SPIE student chapter has been actively participating various activities (i.e. outreach, visiting lecture) to promote our student chapter and SPIE over the year since the new student chapter officers elected. We are keen to promote the optics and photonics field and knowledge to young aged students through helping/participating into our outreach activities. We have also invited one visiting academic to give us a talk about his research and share his experiences with SPIE. Through that event, the researcher had opportunities to provide the potential collaboration opportunities aiming to their research works.

In August 2018, two of our student chapter officers will represent our student chapter to participate into the SPIE student chapter leadership workshop in San Diego. Through that, we believe it will be a very good opportunity to network with other student chapters and share the experiences.

Later on this year, we have also planned to organise student networking events to promote our student chapter and aim to get more student members involved into our chapter.