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High-Power Lasers: Technology and Systems, Platforms, and Effects

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Editors

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Willy L. Bohn, BohnLaser Consult (Germany)

Introduction

This was the sixth high-power laser conference, which had an excellent attendance throughout the four sessions despite some last-minute cancellations. However a fairly full programme was maintained through Prof Bohn delivering one key-note address on behalf of the 'JTO' presenter, who was unable to travel. In general, the quality of the papers was high, with some excellent innovative ideas presented. In addition, some intensive discussions and exchange of ideas took place among the experts in all sessions of the conference. It provided an excellent forum for attendees, specialists and newcomers, especially in the areas of laser-device demonstration and evaluation of laser-based systems, along with analysis of laser-induced effects.

In the first session a key-note presentation was given by Dr Jabczynski from the Wojskowa Academy (Poland) concerning the analysis of a medium-range directed-energy laser system The contributing papers from this session described a multi-terrawatt OPCPA system and a tuneable linewidth all solid-state guide-star (sodium line) device.

The second session (Fiber Lasers and Beam Scaling) was a valuable session with all the scheduled papers delivered. The two invited papers described recent progress with scaling of fibre lasers and a route to 'eye-safer' silica fibre systems through exploitation of nano-particles enabling high-power emission from erbium transitions. The two contributing papers described progress with the development of mid-infrared fibre lasers for remote sensing through super-continuum generation and the demonstration of an all-glass micro-structured fibre cladding light-stripper. The latter device had been developed for use with kilowatt-class laser systems.

The third session covered advanced gas-laser developments, and in particular, advances with diode-pumped alkali lasers (DPALs). Dr Zhdanov's invited paper described studies investigating the degradation mechanisms in DPALs, supported by some recent results. A second invited paper described experimental and theoretical studies with a caesium static cell device. The three contributing papers were from Ben-Gurion University of the Negev concerning supporting simulations of lasing events in static and flowing alkali-vapour cells.

The final session covered presentations on Laser Interaction, Effects and Components with three contributory papers. These papers covered analysis of the spectral emission from targets when illuminated with an intense laser beam, the interaction effects on composite materials and the development of a mid-wave infrared, high-power device. The first two papers in this session stimulated some very interesting discussion with regard to standoff target identification and discrimination during high energy laser irradiation.

All of the sessions were well attended, and as indicated above, the discussions were certainly very valuable. These discussions provided an invaluable insight into the way that the high-power source technology and systems are evolving and being applied to meet military capability requirements.

The current fiscal constraints and failure of presenters to attend had an adverse effect on the conference programme. Consequently, there was an impact on the content of the programme; however, despite this impediment, this was still a viable and most valuable conference.

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