



Boost of Algae Output by More Than 20 Percent using SCHOTT Oval Glass Tubes

Heliae photobioreactors increase total daily algae growth rate and maximum culture density with SCHOTT oval glass tubes

Mainz, April 28, 2015 – SCHOTT, a leading supplier of specialty glass and glass-ceramics, has announced that its new oval glass tubes for photobioreactors (PBRs) increase maximum dry biomass output per day by more than 22 percent in its latest study in partnership with Heliae, a technology-driven algae production company. For the first time, SCHOTT's round glass tubes were retrofitted with oval tubes in Heliae's Helix™ seed PBR. An indoor study over multiple cycles in several months found that the algae growth rate per volume increased by more than 45 percent, while the oval shape reduces the total internal volume of PBR tubes by 15 percent compared to standard circular tubes resulting in the overall output increase stated above.

The oval cross section increases the tube's surface area that is oriented towards the light source. Therefore, more of the algal culture is reached by light, stimulating photosynthesis and enhancing algae growth. Furthermore, the final maximum culture density increased by over 25 percent due to more efficient light exposure of the algae culture.

"Heliae is continuously improving algae production rates and culture reliability," said Eric Lichtenheld, Chief Operating Officer at Heliae. "SCHOTT's oval glass tubes are the latest example of their efforts to expand algae production capabilities and serve a growing industry. Combining Heliae's production capabilities with SCHOTT's advancing technology enables a market viable product. Heliae looks forward to continued joint efforts opening new possibilities for algae production."

SCHOTT's oval glass tubes feature round ends that are compatible with existing PBR tube couplings, making them easy to incorporate into existing systems. The



oval glass tubes can also be easily oriented toward light sources, allowing researchers to get their systems up and running quickly.

“The results of this study reflect the hypotheses presented in our original computer simulations, and demonstrate the advantages of glass tubing for algae production,” said Dr. Nikolaos Katsikis, Director of Business Development at SCHOTT Tubing. “SCHOTT and Heliae will continue to build on these positive results with tests at the Helix reactor located at the Arizona State University. Unlike previous tests, the light source is not only artificial light, but also sun light. The SCHOTT and Heliae partnership continues to expand the potential for algae production in PBRs,” Katsikis added.

SCHOTT is a leading international technology group in the areas of specialty glass and glass-ceramics. The company has more than 130 years of outstanding development, materials and technology expertise and offers a broad portfolio of high-quality products and intelligent solutions. SCHOTT is an innovative enabler for many industries, including the home appliance, pharmaceutical, electronics, optics, automotive and aviation industries. SCHOTT strives to play an important part of everyone’s life and is committed to innovation and sustainable success. The group maintains a global presence with production sites and sales offices in 35 countries. With its workforce of approximately 15,400 employees, sales of 1.87 billion euros were generated in fiscal year 2013/2014. The parent company, SCHOTT AG, has its headquarters in Mainz (Germany) and is solely owned by the Carl Zeiss Foundation. As a foundation company, SCHOTT assumes special responsibility for its employees, society and the environment.

Public Relations

SCHOTT AG
Christina Rettig
PR Manager
Phone: +49 (0)6131 - 66 4094
Fax: +49 (0)3641 - 28889 141
christina.rettig@schott.com
www.schott.com