

SPACE POWER SYMPOSIUM (C3)  
Advanced Space Power Technologies and Concepts (3)

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INVESTIGATION ON HIGH EFFICIENCY SOLAR PUMPED ND:YAG LASERS

**Abstract**

Abstract: Solar directly pumped solid state lasers are a promising approach for the laser-based Space Solar Power System (L-SSPS). Research is conducted on the solar pumped solid state lasers and related technologies, including the selection of laser medium suitable for solar pump, focusing optics suitable for large dimensional solar light collection, and the consideration for the dimension of secondary focusing optics. A theoretical model of the energy transformation from solar light to the laser output is established. Based on above analyses, experimental equipment is fabricated and tested. Economical large Fresnel lens is employed as the first focusing optics. Mirror-reflect and defusing-reflect corn concentrator are chosen as the secondary focusing optics, with the comparison of their performance. With 8115mm 1