A MULTI-WATT SINGLE FREQUENCY CW OPO SYSTEM TUNABLE FROM 600NM TO 4600NM

A. HENDERSON, *LOCKHEED MARTIN ACULIGHT, 22121 20th Avenue SE, Bothell, WA 98021*.

The output wavelength range of commercial CW OPOs has been dramatically extended to reach both further into the mid-infrared and into the visible/ near-infrared, providing a tuning range from 600nm to 4600nm. Specific examples of new capabilities are provided below:

(1) Extension of the mid-infrared wavelength coverage to 4630nm by annealing of the PPLN crystal to reduce OH absorption
(2) Generation of 3Watts of orange radiation tunable 604nm to 616nm by intra-cavity sum frequency generation of OPO pump and signal
(3) Generation of over 100mW near-IR radiation tunable 1240nm to 1500nm by extra-cavity second harmonic generation of OPO idler

In each case, the same robust 1064nm fiber laser pump source may be interchanged between these OPO modules to access specific wavelength ranges. In all of the examples above, the wide (100GHz) mode-hop-free tunability of the source is retained, making the output ideal for high resolution spectroscopy. The high power, narrow (sub-MHz) linewidth and excellent beam quality of the OPO output make it an ideal pump source for secondary nonlinear processes to reach further into the visible/UV and mid-infrared / Terahertz while providing spectroscopic measurement capability.