

**PATENT**  
Attorney Docket No. EGQ-005CP3C3

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

APPLICANT:	Smith	CONFIRMATION NO.:	5575
APPLICATION NO.:	14/510,959	GROUP NO.:	2881
FILING DATE:	October 9, 2014	EXAMINER :	McCormack, Jason L.
TITLE:	Laser-Driven Light Source		

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**AMENDMENT AND RESPONSE**

Madam:

This paper is submitted in response to the Office Action mailed from the Patent Office on November 12, 2014. In the event any fees are due, the Commissioner is hereby authorized to charge them to Attorney's Deposit Account No. 50-3081.

Applicant respectfully requests entry of this Amendment and Response, in which:

**Amendments to the Specification** begin on page 2,

**Amendments to the Claims** begin on page 3, and

Applicant's **Remarks** begin on page 9.

**Amendments to the Specification**

Please amend the title of the application as indicated below, in conformance with 37 C.F.R. § 1.121.

Light Source for Generating Light from a Laser Sustained Plasma in an Above-  
Atmospheric Pressure Chamber ~~Driven Light Source~~

### **Amendments to the Claims**

Please amend the claims as follows, in compliance with 37 C.F.R. § 1.121. This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of the Claims:**

1. (Currently amended) A laser driven light source comprising:  
  
a sealed pressurized chamber having a gas at a pressure greater than 10 atmospheres during operation ~~atmospheric pressure~~;  
  
an ignition source for ionizing ~~a~~ the gas within the chamber; and  
  
an at least one ~~substantially~~ continuous laser for providing energy within a wavelength range from about 700 nm to 2000 nm to the ionized gas to sustain a plasma within the chamber to produce a plasma-generated light having wavelengths greater than 50 nm.  
  
the chamber further comprising a region of material that is transparent to at least a portion of the plasma-generated light and that allows said portion of the plasma-generated light to exit the chamber.
2. (Currently amended) The laser driven light source of claim 1, comprising at least one optical element for modifying a property of the laser energy provided to the ionized gas.
3. (Currently amended) The laser driven light source of claim 2 wherein the optical element is a lens or mirror focusing the laser energy into a region of the ionized gas.
4. (Canceled)
5. (Currently amended) The laser driven light source of claim 1 wherein the pressurized chamber or a window in the chamber comprises a material selected from the group consisting of quartz, Suprasil quartz, sapphire, MgF<sub>2</sub>, diamond, and CaF<sub>2</sub>.

6. (Currently amended) The laser driven light source of claim 1 wherein the region of transparent material is a window comprising a material selected from the group consisting of quartz and sapphire~~pressurized chamber is a sealed chamber.~~
7. (Currently amended) The laser driven light source of claim 1 wherein the at least one laser is a continuous wave laser.
8. (Currently amended) The laser driven light source of claim 1 wherein the ignition source is selected from the group consisting of electrodes, an ultraviolet ignition source, a capacitive ignition source, an inductive ignition source, a flash lamp, a pulsed laser, and a pulsed lamp.
9. (Currently amended) The laser driven light source of claim 1,~~comprising wherein the pressurized chamber has a wall that forms a curved reflective surface for receiving at least a portion of the plasma-generated light and reflecting the portion of the plasma-generated light toward the region of transparent material to exit the chamber~~at least one optical element for modifying a property of electromagnetic radiation emitted by the ionized gas, the optical element configured to deliver the electromagnetic radiation emitted by the ionized gas to a tool.
10. (Canceled)
11. (Canceled)
12. (Currently amended) The laser driven light source of claim ~~11~~ 1 wherein the pressure in the chamber during operation is greater than about 30between 10 atmospheres and 200~~atmospheres.~~
13. (Canceled)
14. (Canceled)
15. (Currently amended) A laser driven light source comprising:  
a light bulb defining a sealed pressurized chamber containing a gas at an operating pressure of greater than 10 atmospheres;

an ignition source for ionizing a gas within the light bulb,

at least one at least substantially continuous laser for providing energy within a wavelength range of up to about 2000 nm to the ionized gas to sustain a plasma within the light bulb to produce a plasma-generated light having output wavelengths greater than 50 nm,

the sealed pressurized chamber further comprising a region of material which is transparent to at least a portion of the plasma-generated light, the region of material allowing said portion of the plasma-generated light to exit the light bulb and illuminate a surface

in which a laser sustained plasma emits plasma-generated light produced by the laser sustained plasma by (i) providing at least substantially continuous laser energy to an ionized medium within the chamber and (ii) maintaining the chamber at a pressure that is greater than atmospheric pressure.

16. (Currently amended) The method laser driven light source of claim 15 wherein the pressure within the chamber is maintained at between about 10 atmospheres and 200 atmospheres during operation of the light source.

17. (Currently amended) The laser driven light source of claim 15 wherein the chamber comprises a paraboloid or ellipsoid shape with an inner surface that is reflective.

18. (Currently amended) The laser driven light source of claim 17-15 further comprising wherein the region of transparent material is a window that is transparent to the emitted plasma-generated light and the laser energy.

19. (Currently amended) The laser driven light source of claim 18 wherein the window comprises sapphire or quartz.

20. (Currently amended) A laser driven light source, comprising:

a sealed pressurized chamber having (i) a wall that forms a curved reflective surface, (ii) a window, and (iii) having an operating pressure that is greater than atmospheric pressure;

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