WHAT IS CLAIMED IS:

1. A method, comprising:

aligning an objective of an instrument with an optical target that includes a solid body that encloses a fluorescing material, wherein the aligning operation comprises:

aligning the objective with a grating region that includes a microstructure located above the optical target and focusing the excitation light to a first focal point at the microstructure, and

aligning the objective with a non-grating region that is void of the microstructure and focusing the excitation light to a second focal point that is below an upper surface of the optical target;

directing excitation light onto the optical target;

detecting fluorescence emission from the optical target as reference information; and

utilizing the reference information in connection with at least one of optical alignment or calibration of the instrument.

2. The method of claim 1, wherein the fluorescing material comprises a chemical element that comprises an ion of at least one of erbium, holmium or praseodymium and wherein the solid body material comprises at least one of silicate, germanate, InF_3, or ZBLAN.

3. The method of claim 1, wherein the solid body has a predetermined phonon energy $HOST_{PE}$, the fluorescing material exhibiting a select ground energy level, a target excitation (TE) energy level and a next lower lying (NLL) energy level spaced an energy gap FM_{EG2} below the TE energy level, wherein a ratio of the $FM_{EG2}/HOST_{PE}$ is three or more.

4. The method of claim 3, wherein the ratio of the $FM_{EG2}/HOST_{PE}$ equals or is between four and ten.

5. The method of claim 1, wherein the solid body includes at least one of glass, amorphous polymers, crystalline materials, semi-crystalline polymers, metallic glass, or ceramic.

6. The method of claim 1, wherein the fluorescence emission has a center wavelength at or below 1000 nm.

7. The method of claim 1, wherein the solid body has a maximum phonon energy less than or equal to 580 cm^{-1}.

8. The method of claim 1, wherein the optical target further comprises microstructures formed on a surface of the optical target to form a grating layer.