

DAGSI Research Topic

1. **Research Title:** Growth and evaluation of laser and nonlinear optical materials

2. **Individual Sponsor:**

Dr. Rita D. Peterson
AFRL/RYDH Bldg 620,
2241 Avionics Circle
WPAFB, OH 45433-7333
Rita.Peterson@us.af.mil

3. **Academic Area/Field and Education Level**

Physics, Materials Science, Chemistry, Chemical Engineering, Electrical Engineering
(BA/BS, MS or PhD level)

4. **Objectives:** Fabrication and characterization of bulk crystal materials for laser and nonlinear devices.

5. **Description:** This research topic involves fabrication of bulk crystals by solution or melt growth techniques and their characterization, in order to identify promising candidates for eventual use in Air Force applications. Materials of interest include both crystals (inorganic or organic) suitable for use in nonlinear optical devices, and crystals that can be doped with active ions for use as laser gain media. Grown materials will be characterized, as appropriate, in terms of spectroscopic properties (absorption, emission, fluorescence lifetime), nonlinear properties, thermo-optical properties, and material composition and morphology. Research will be conducted primarily on-site at Wright-Patterson AFB where all necessary equipment and facilities are available.

6. **Research Classification/Restrictions:** This research is unclassified.

7. **Eligible Research Institutions:** Any research institution is eligible, but the student will be expected to conduct his or her research on-site at Wright-Patterson AFB.