

## Solution Hardening in Multi-principal Component Alloys

1. **Research Title:** Solution Hardening in Multi-principal component Alloys
2. **Individual Sponsor:**

Dr. Christopher Woodward AFRL/RXCM  
Building 655, rm 089  
2230 Tenth St.  
WPAFB, OH 45433-7817  
[christopher.woodward@us.af.mil](mailto:christopher.woodward@us.af.mil)

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

Materials Science, Physics, Computer Science (MS, PhD level)

4. **Objectives:** Develop a strengthening model for high concentration solid solution alloys.
5. **Description:** Multi-principal component alloys have recently become an area of intense research in the alloy development community. This emerging class of alloys can exhibit significant solution strengthening while maintaining a very favorable low temperature ductility. Currently there are no well accepted models for high concentration solution hardening and this emerging alloy class offers an excellent opportunity to explore this problem. Generic atomistic potentials will be used to explore the possible solute-dislocation interactions possible in these chemically complex alloys. These data will then be used to extend classical models of dislocation - solute (and precipitate) interactions for both fcc and bcc alloys.
6. **Research Classification/Restrictions:** This research topic is basic research and will be published in the open literature.
7. **Eligible Research Institutions:** Indicate to what organizations this topic should be provided



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