

## **TOPICS OF INTEREST**

The following is a list of topics generated from the arocket list. The list was created as a foundation for a FAQ or series of FAQ's regarding Amateur Rocketry. The list below has been rephrased and amended. However, the number for each topic has been retained as originally described on the arocket list FAQ post.

It is unnecessary to answer all the explicit or implicit questions in any given item to provide useful information. If you have knowledge or experience in any area listed, or in areas not listed but useful, please submit an article that complies with the conditions found on the "Help" page of the "Docking Station" site.

**N.B. SAFETY ISSUES MUST BE DISCUSSED IN ALL ARTICLES**

**0. FAQ of Arocket Mail list - this document.**

**1. Construction and parts for a small test motor for solid propellant (1" OD?).**

**2. Construction and parts for a small test motor for hybrid propellant (1" OD?).**

**3. Formulation, compounding, use and characteristics (a, n, etc.) of simple solid propellants (KN, AN? with Sucrose, Sorbitol, Asphalt?).**

**4. Measurement techniques (describe fixtures with drawings?) and related math to experimentally determine a, n, Tc, chamber pressure, Isp, etc. for solid and hybrid motors.**

**5. Low cost home constructed lab static test stand and instrumentation including pressure transducers/load cells, wiring, pc boards, calibration, data acquisition and software.**

**6. Nozzle fabrication methods, pros and cons, lathe fabrication of graphite, steel, stainless and others with descriptions of cutting tools, speeds etc.**

**7. Danger and uncertainty in changing solid propellant formulations including the uses and misuses of additives as well as descriptions of which additives do what.**

**8. General discussion about hydrogen peroxide, grades, sources, concentration, decomposition catalysts, hazards.**

**9. Known problems, hazards and uncertainties in production of propellants (AP, KN, AN) as well as solutions to those problems, hazards and uncertainties.**

**10. Selection of tools, utensils and working areas for solid propellant mixing and cleanup including vacuum degassing and cleanup systems.**

**11. Sources of supply for small parts (Snap rings, O rings, butyl and viton, thrust washers, phenolic tube, paper tube, aluminum tube and pipe, specialty metals) as well as chemical supply sources. Also, what stock liner material fits into which chamber material etc.**

**12. Determination of strength of materials for use in motors, bulkheads, nozzles, airframes, fins, nose cones, fasteners, payloads, recovery systems, pc boards, etc.**

**13. Determination of design loads for motors, bulkheads, nozzles, airframes, fins, nose cones, fasteners, payloads, recovery systems, pc boards, etc.**

**14. Theory, design and construction (including theory) of motors, bulkheads, nozzles, airframes, fins, nose cones, fasteners, payloads, recovery systems, pc boards, etc for solids and hybrids.**

**15. Purpose, theory, design and construction of recovery devices including tracking and finding devices.**

**16. Theory, design and construction of ignition control devices (control box etc.) and high reliability igniters.**

**17. Theory, design and construction of launch control devices (gantry, rod, rail, lugs, etc.).**

**18. Discussion of legal issues regarding the hobby and locations for static tests and flights, experimental or otherwise. Legitimization of activities relative to rocketry; gray or ambiguous areas of law and regulation, areas of definite illegality and legality, regulatory and controlling agencies and references to them**

**19. Overview of simulation Software: chemical, aerodynamic, structural, motor performance, and motor grain burn. Availability, usage, applicability, strengths and limitations." Includes Propep and Guipep.**

**20. Areas where a rank amateur \*will make mistakes\*: Problems of motor casings not correctly calculated, coming apart from over pressure, nozzles blowing out, tanks rupturing, erosive burning, iffy ignition methods.**

**21. Rocket electronic payloads: tracking, telemetry, and recovery.**

**22. Locating sites for experimental tests, flights and so forth.**

**23. Primary text references - The Books to scrounge for.**

**24. Funky, kool or sci-fi stuff (that may not work), X33 motor, Hybrid ramjets, solar sails, etc.**

- 25. Water and Steam Rockets - technical, regulatory and non-trivial aspects.**
- 26. Propep and Guipep - technical details, prelim users manual, problems.**
- 27. N2O Related Hybrids.**
- 28. Kn and Efficiency in Solid motors.**
- 29. Vacuum and Degassing Chambers design, construction, hints and kinks.**
- 30. Grain Configurations for solid and hybrid motors.**
- 31. Overcoming the limits of text based email - Attachments, sketches, referring to drawings on web pages, use of public accessible Arocket hard disk.**
- 32. Telemetry and tracking- Telemetry and tracking, Visual tracking and how to make smoke, Altimetry, HAM transponders, GPS, Ground-based radar.**
- 33. Choice of propulsion system: Bi Liquid, Hybrid or Solid.**
- 34. Materials handling: MSDS, storage, and delivery to launch sites, special considerations for LOX.**
- 35. Pressure vessel design as applied to combustion chambers, propellant tanks, and bulkheads.**
- 36. Calculation of rocket nosecone aerodynamic forces and subsequent required airframe strengths.**
- 37. Estimating aerodynamic forces on a rocket fin and subsequent required fin and airframe strengths.**
- 38. Designing and building a small payload container suitable for limited space environment exposure (e.g. CATS).**
- 39. Selection and use of instrumentation and processors for limited space environment exposure (e.g. CATS).**
- 40. CATS - Cheap Access To Space - \$250,000 for 200 kilometers unmanned!**
- 41. X Prize - \$10,000,000 for 50 miles manned!**
- 42. Use and abuse of "Alts4" Rogers Aerospace software.**

**43. Selection and use of materials for limited time high temperature applications such as re entry cone.**

**44. Humans in Space - Also known as "How we are REALLY going to get off this planet (or not...)."**

**45. Insurability. Range from insurance for commercial propellant mfg. to launch insurance. Launch insurance ranges from TRA/NAR insurance to problem of suborbital and orbital launch insurance.**

**46. Psychological problems of rocketeers/rocketeering - derived paranoia, suspicion and being shunned by the Public, Suppliers and others. Worrying about that last 0.1% of legality. Being made fun of, feared, discriminated, being the recipient of blatant prejudice. \*You are not watching TV in all spare moments.....You are to be assimilated.....You will worry about ClintonStuff and not rockets... Prepare to be assimilated.\***

**47. General historical and contemporary issues about hydrogen peroxide.**

**48. Specific design issues about hydrogen peroxide of various concentrations: decomposition, catalyst methods and how they affect throttling in bipropellant and hybrid motors.**

**49. Special problems of rocket powered aircraft and trans atmospheric aircraft "flight".**

**50. Simplified model for active cooling of rocket motor chamber and nozzle.**

**99. Safety issues. Above topics have embedded safety. Additional notes are here.**

## **ADDITIONAL THOUGHTS**

**Discussion of pure safety issues. Appropriate distances from various activities and appropriate methods of cover and/or protection.**