Energetic Polymers via ROP

The bulk majority of explosives and propellants are small, discrete molecules. Polymeric versions of these small molecules possess a number of potential advantages.

1. *Intricate shapes* possible by various processing methods (*e.g.* melt injection).
2. Potential for *recovery/reuse* (*e.g.* extrusion from a casing then remolding).
3. *Low inhalation hazard* due to low volatility even in melt state.
4. *Low dermal toxicity* hazard (polymers are not readily absorbed by direct contact).
5. Potential to *control detonation velocity* (explosives) or rate of deflagration (propellants) by adjusting polymer microstructure and morphology.

In 2005 Innovative Science, Inc.[1] began formal discussions with a major defense contractor and manufacturer of consumer ammunition[2] regarding the development of improved methods for the manufacture of energetic polymers used as rocket binders. Specifically the client wanted to improve the synthesis of energetic thermoplastic elastomers (TPEs) derived from the ring opening polymerization (ROP) of monomers such as glycidyl azide. For an overview of this topic area please refer to the document entitled *ROP of Energetic Monomers* in the *Investment Opportunities* section of the website.

Cost = $150,000 for Stage 1 (includes patent filing costs)
Likelihood of Success = 70 %
Earning Potential = 9
Return on Investment = The investor will retain all intellectual property rights in return for granting Innovative Science, Inc. a 10 % royalty for use of the developed technology.

References

1. Formerly Stewart's Technologies, LLC
2. Innovative Science does not represent this company and therefore will not name it publically.