



## Tin Whisker Manufacturing, Detection, Response, and Compound Manufacturing Apparatus and Method

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- Materials and Manufacturing
- NSWC Crane

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Tin whiskers are hair-like protrusive metal structures that form on a variety of metals and/or alloys. They are usually undesirable and are associated with a large number of defects. Attempts to eliminate whisker formation have largely failed including creation of manufacturing processes where the use of lead is avoided. Widespread experimentation and research have failed to provide needed results or countermeasure to risks associated with whisker formation.

Naval Surface Warfare Center, Crane Division (NSWC Crane), has patented an invention for making productive uses of normally undesirable tin whiskers. Embodiments of the invention include a variety of apparatuses and methods associated with forming and using whiskers as well as forming whisker compounds is disclosed. For example, whisker detection modules can be created which provide a whisker surveillance capability. The whisker detection modules can further be coupled with a whisker response system such as an alarm or insulating material dispersing system. Another aspect of the invention is providing a variety of environments or microenvironments with regard to a whisker forming structure to affect whisker creation such as maximizing whisker formation. Another example includes provision of a variety of embodiments for manufacturing compounds of whiskers of various metal and metal alloys, including structures and methods is provided. Whisker compounds produced using various embodiments of the invention can be used for various applications.

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