

Non-Metallic Cryoprobe for Cryo-ablation
J.M. Pfothenhauer, R. Harter, L. Kossel
Department of Mechanical Engineering
University of Wisconsin - Madison

A variety of technical approaches for cryo-ablation are in use in the United States. All are based on cooling via Joule-Thomson expansion, but the variations are related to the type of gas used (single component or mixed gases), the pressure of the supplied fluid, whether the cycle is closed or open, and inclusion of a freeze-thaw process. All commercial versions employ metals in the cryo-probe and heat exchanger components. A research collaboration underway in Wisconsin (USA) including Marvel MedTech and the University of Wisconsin – Madison is pursuing the use of a completely non-metal cryoprobe / heat exchanger along with MRI to increase the effectiveness of identifying and eliminating breast cancer. The working fluid is a mixed-gas refrigerant. This report provides an overview of the Wisconsin approach along with its advantages and challenges.