ACMIT

Austrian Center for Medical Innovation and Technology

Main location	Wiener Neustadt, Niederösterreich
Other locations	-
Thematic field	Human biopsy

Success story summary

Enhanced cryo technology based biopsy sond

The relevance of biopsy results from samples acquired from inside the human body strongly depends on the quality of the specimen and the method of their acquisition. One method to gather tissue samples is by local freezing of the tissue with a cryogenic probe and to rip the frozen tissue in order to transport it through an endoscopic channel for further analysis. ACMIT developed a new sond design providing major improvement for the significance of biopsies by extremely down scaled sond dimensions, a novel tip design and special microfluidic components inside the cryogenic probe head. As a result, exact definition of sample location and predictable sample size significantly will improve the accuracy and reproducibility of biopsy interventions.

Success story

In the context of ACMIT efforts to increase the safety of surgical interventions and in order to improve the expressiveness of diagnostic results in the field of biopsy, a novel cryo sond has been developed. By the use of special materials and a unique design of micro fluidic channels, a new probe has been designed, manufactured and successfully tested in small sample series. The left picture below shows one miniature sond carrying a micro ice ball, produced in less than one second after immersion into a water quench and showing the efficiency of the device.

Left: *Micro cryo sond with ice ball* *Right:* *Assembly of samples in the clean room*

The low mass of the sond probe leads to very short freezing and thawing times, which facilitate the workflow during biopsy interventions. Due to the exact definition of cooling power, the position of origin and the size of the acquired samples can be defined and samples can be easily transported through the retrieving channel of an endoscope for further analysis.

Impact and effects

The innovative miniature cryo sonds developed at ACMIT imply a significant impact on all sorts of cryo-based therapeutic and diagnostic treatments: By local and exactly defined freezing of tissue, devitalisation or extraction of tissue anomalies can be performed in very precise manner. Due to the miniature size, the new sonds support the medical trend of performing more and more interventions by minimally invasive access, which leads to less traumatization of the patient and shortened intervention times in the operating room. Moreover, new medical applications, where the large diameters of actual state-of-the-art sonds pose limitations, e.g. in bronchial diagnosis, can be covered successfully with this innovative sond type.

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