

Attana has submitted a new patent application

Attana has filed a new patent application with claims resulting in improved piezoelectric properties of piezoelectric resonators. The innovations are applicable to any piezoelectric resonator and show good prospects for commercialization both within Attana instruments and a broad range of other technological applications.

Attana has filed a new patent application with several claims which result in improved piezoelectric properties of piezoelectric resonators. The proposed inventions increase the resonant frequency of a piezoelectric resonator by up to 50% while simultaneously improving the frequency stability by up to 10%.

A piezoelectric resonator is an electromechanical component which generates or filters high frequencies. Piezoelectric resonators are found in a variety of devices ranging from consumer electronics, such as computers and mobile phones, to industrial test- and measurement equipment. The quartz crystal microbalance (QCM) technology employed by Attana, uses a piezoelectric resonator as a mass-sensitive sensor to characterize molecular interactions down to sub-nanogram levels, in biologically relevant environments.

The general performance of a piezoelectric resonator is dependent on two key parameters: (1) the resonant frequency, f_0 , and (2) the frequency stability, Q factor. Conventionally, increasing the resonant frequency of a piezoelectric resonator is achieved by reducing the thickness of the piezoelectric material. However, a reduction in thickness results in reduced mechanical stability of the resonator, and subsequently, a reduction in Q factor. In other words, there is a trade-off between improved frequency and reduced stability.

The novel piezoelectric material proposed by Attana is configured to have an improved shear wave velocity, simultaneously improving both the resonant frequency and the quality factor of the resonator. The invention is useful for improving the performance of piezoelectric resonators relating to QCM, as well as any other application which implements a piezoelectric resonator. Possible applications can include computer clock generators and other resonating systems, where a higher resonant frequency yields a higher clock rate and improved Q factor results in improved frequency stability. Likewise, the proposed resonator can be implemented in oscillator circuits of communication devices for improved signal selection over a narrower bandwidth resulting in improved information transfer.

The Attana patent application covers: (1) a piezoelectric resonator, (2) a piezoelectric material for a piezoelectric resonator, and (3) a method for manufacturing a piezoelectric resonator. The claims have promising commercialization potential since the benefits can be achieved without significant increases in production costs.

Attana will commence commercial validation of the innovations within mass-sensitive sensor technologies during 2020 and aims to have the first Attana products available for customer delivery in the second half of 2021. Furthermore, Attana will also seek to out-license the innovations for all applications outside of the company's core business area.

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About Attana

Attana was founded in 2002 with the vision of *in-vitro* characterization of molecular interactions mimicking *in-vivo* conditions. Since then, Attana has developed proprietary label free biosensors for biochemical, crude, sera, and cell-based assays and the Attana Virus Analytics (AVA) platform, a proprietary in-vitro diagnostics (IVD) tool. Attana products and research services are used by Big Pharma, biotech companies and academic institutions within the life sciences. To learn more about our latest services and products, please visit www.attana.com or contact sales@attana.com