The Swedish astrophysicist and Nobel Prize winner Hannes Alfvén said: Theories come and go - the experiment is here forever. Often a theory, which we set up to describe an observed physical phenomenon, suffers from the lack of knowledge of decisive parameters, and therefore at best the theory becomes insufficient. Contrary, the experiment always reveals nature itself, though at prevailing experimental conditions. With essential parameters being out of control and even maybe unidentified, apparently similar experiments may deviate way beyond our expectations. However, these discrepancies offer us a chance to reflect on the character of the unknown parameters. In this way non-concordant experimental results may hold the key to the development of better theories - and to new experiments for the testing of their validity. Cavitation and cavitation nuclei are phenomena of that character.