

## Accepted Manuscript

An objective comparison of commercially-available cavitation meters

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PII: S1350-4177(16)30166-3

DOI: <http://dx.doi.org/10.1016/j.ultsonch.2016.05.024>

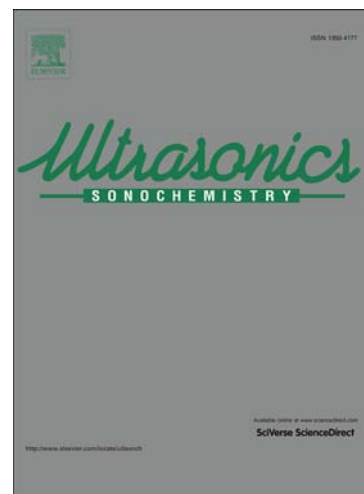
Reference: ULTSON 3234

To appear in: *Ultrasonics Sonochemistry*

Received Date: 24 November 2015

Revised Date: 6 May 2016

Accepted Date: 13 May 2016



Please cite this article as: D. Sarno, M. Hodnett, L. Wang, B. Zeqiri, An objective comparison of commercially-available cavitation meters, *Ultrasonics Sonochemistry* (2016), doi: <http://dx.doi.org/10.1016/j.ultsonch.2016.05.024>

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**An objective comparison of commercially-available cavitation meters**

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**Abstract**

With a number of cavitation meters on the market which claim to characterise fields in ultrasonic cleaning baths, this paper provides an objective comparison of a selection of these devices and establishes the extent to which their claims are met. The National Physical Laboratory's multi-frequency ultrasonic reference vessel provided the stable 21.06 kHz field, above and below the inertial cavitation threshold, as a test bed for the sensor comparison. Measurements from these devices were evaluated in relation to the known acoustic pressure distribution in the cavitating vessel as a means of identifying the mode of operation of the sensors and to examine the particular indicator of cavitation activity which they deliver. Through the comparison with megahertz filtered acoustic signals generated by inertial cavitation, it was determined that the majority of the cavitation meters used in this study responded to acoustic pressure generated by the direct applied acoustic field and therefore tended to overestimate the occurrence of cavitation within the vessel, giving non-zero responses under conditions when there was known to be no inertial cavitation occurring with the reference vessel. This has implications for interpreting the data they provide in user applications.

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