Supporting Information

To assess whether the use of different ultrasound conditions like bulk temperature, acoustic power and solution volume has any effect on the sonochemical efficiency, several KI dosimetry experiments where performed as can be seen in Figure S10. The experimental details can be found in Table S1. The results show that by applying the same power and temperature to the 408 kHz system as was used for the 20 kHz system, there are no significant differences in the sonochemical efficiency. Further decreasing the power, however, showed that the sonochemical efficiency increases at low acoustic powers. The results also show that when the solution volume is increased, the sonochemical efficiency is reduced. This means that the difference in sonochemical efficiency between the 20 kHz system and the 408 kHz systems is even larger if both systems are operated at the same conditions.

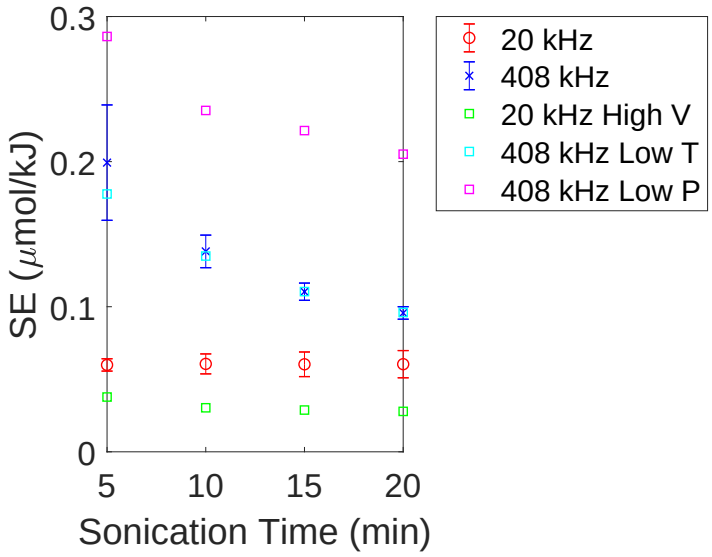
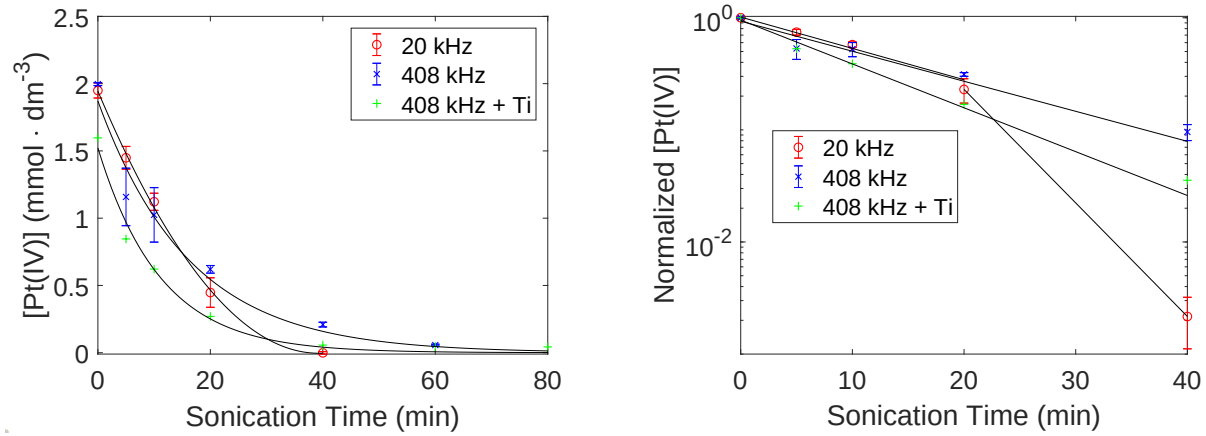


Figure S 10: Sonochemical efficiency as a function of sonication time for different ultrasound conditions listed in Table S1. Measurements performed at the synthesis conditions are only referred to by their frequency, while any modifications are marked as Low P for lower power, High V for higher volume, and Low T for lower temperature compared to the synthesis conditions.

Table S 1: Overview of the different ultrasound parameters which was used in this experiment.

Frequency (kHz)	Gas	Power (W)	Temperature (°C)	Volume (mL)
20	Ar	42.9	5	50
20	Ar	42.9	5	200
408	Ar	54	20	200
408	Ar	42.9	5	200
408	Ar	11.4	20	200

Measurements of the reduction rate of Pt(IV) are shown in Figure 11 and shows the effect of adding the eroded particles from the 20 kHz probe to the 408 kHz system. The rate constant increased from k = 0.062 min^{-1} to k = 0.12 min^{-1} by adding the seed particles to the system.



(a) (b)

Figure S 11: Concentration of Pt(IV) in the solution as a function of sonication time under 20 kHz (○), 408 kHz (×), and 408 kHz with the addition of Ti seed particles (+) (a), and the normalized concentration of Pt(IV) in the solutions plotted on a semi-logarithmic scale (b).