(III) wurde entsprechend (II) aus (IV) und $NaN[Si(CH_3)_3]_2$ dargestellt. Es handelt sich um eine klare, viskose, fast geruchlose Flüssigkeit, Kp 135°/1 Torr, $n_D^{20} = 1{,}5260$.

Bei der Darstellung von (IV) zeigte sich, daß die verschiedenen Methylchlorgermane, z.B. CH_3GeCl_3 (Kp 111°) und $(CH_3)_2GeCl_2$ (Kp 121—122°), deren destillative Trennung sonst schwierig ist, bequem rein darzustellen sind, wenn man sie durch Umsetzung mit C_6H_5ONa zunächst in die entsprechenden Phenoxyverbindungen überführt, die sich im Kp beträchtlich unterscheiden: $Ge(CH_3)_2(OC_6H_5)_2$ Kp = 126 bis 127° pro 0,5 Torr; $Ge(CH_3)(OC_6H_5)_3$ Kp = 169 bis 170° (0,5 Torr). Diese lassen sich mit HCl leicht zu den Chlorverbindungen verseifen.

Institut für Anorganische Chemie und Elektrochemie der Technischen Hochschule, Aachen

A. Köster-Pflugmacher und E. Termin

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UHF Acoustic Interaction with Biological Media*)

It is well known that ultrasound interacts with biological systems both in the presence[1]) and absence[2]) of cavitation phenomena. Until recently, however, the upper frequency range available to investigators was limited to that in the neighborhood of 10 Mc by the desire to operate the electromechanical transducer at the fundamental thickness mode. Recent developments in transducer design and operation, in which the piezoelectric element is excited electrically at the odd harmonics of the fundamental thickness mode, have extended the available frequency range to at least 2000 Mc[3]). The purpose of this note is to describe several initial experiments which illustrate that the range of interaction of ultrasound and biological media extends far beyond that previously considered.

Rotifers[4]), small polynucleated aquatic animals several hundred microns in length, were suspended in physiological saline on the surface of the quartz plate (i.e., the transducer was arranged to radiate vertically upwards). At room temperature (22° C), and with no sound present, the specimens attached their (lower) extremity to the surface of the quartz plate and adopted a nearly vertical posture while executing an undulating-like succession of movements confined to an approximately 60° conical volume. The animals were exposed to single ultrasonic pulses ranging from 0.1 sec to several minutes duration at acoustic intensities of the order of 10^{-3} W/cm² in the frequency range from 200 Mc to 600 Mc. Upon irradiation with ultrasound it was observed that only in relatively narrow frequency bands in the neighborhoods of 270 Mc and 510 Mc were these characteristic activities altered. The nature of the change in activity was virtually complete cessation of all movement. The animal, still attached to the quartz plate, assumed a globular configuration and remained dormant for the duration of the acoustic pulse. Upon termination of short acoustic pulses (3 to 30 sec), the specimen recovered the characteristic activity. Numerous rotifers were studied in this manner and any single specimen could be carried through repeated acoustic cycles, throughout the frequency range investigated, without apparent damage. Pulse durations of the order several minutes led to apparent irreversible damage as viability did not return.

Amoeba proteus were also exposed to the radiation at the same frequencies and under similar conditions. Here, however, neither a gross effect on the body of the organism nor a small scale effect, such as perturbation of amoebal streaming, were observed.

Although the nature of the interaction observed with rotifers at 270 Mc and 510 Mc is at present unknown, the following statements can be made. Injury produced in rotifers (and other biological specimens) at lower frequencies (below 1 Mc) has been attributed to cavitation present during ultrasonic exposure[5]). However, the intensities employed in this study are approximately a factor of 10^8 below the threshold of cavitation at these frequencies, viz., 10^5 W/cm², and the acoustic pressure amplitude is approximately 1/100 of the hydrostatic pressure[6]). This fact, together with the findings that suppression of rotifer activity occurs in particular frequency bands and that amoebae are unaffected even in these frequency bands, should eliminate cavitation as the mechanism of interaction. In the absence of more specific information, let it be assumed that the acoustic intensity absorption coefficient per unit path length in the rotifer is the same as the average value observed for the mammalian central nervous system, viz., approximately 0.2 cm^{-1} at 1 Mc, and that it increases linearly with frequency[6]). This leads to an estimate of the time rate of temperature rise in the rotifer of approximately 3×10^{-2}° C/sec. It is seen that for acoustic exposure durations as long as 10^2 sec, the maximum temperature developed in the animal, in the absence of thermal conduction, is but several degrees above room temperature (22° C) and this is not sufficient to be considered seriously for the rotifer, which thrives at temperatures in excess of 35° C[7]). The absorption of sound in the imbedding liquid is sufficiently great, as is the path length in the chamber, such that standing waves of large amplitude are not produced. That this is not important in the alteration of the activity of the rotifer was verified by the observation that changing the acoustic path length had no observable effect upon the experimental results.

As the observed effect appears in the neighborhood of 270 Mc and 510 Mc, two frequency regions nearly integrally related, it is tempting to consider a resonance phenomena as playing a role in the interaction. Further research is in progress.

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Biophysical Research Laboratory, University of Illinois, Urbana, Illinois

Stephen A. Hawley and Floyd Dunn

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Maleic Hydrazide, as a Carbonyl Reagent

Little is known concerning biochemical aspect on the mode of action of maleic hydrazide (MH) as a plant growth regulator, though it has been suggested as a reactant for the sulfhydryl group[1]), or a cofactor of indole acetic acid oxidase system[2]), or diapholase inhibitor[3]).

Table. *Effect of inhibitors on plant amine oxidase*

Inhibitors	Conc.[a]) (M/L)	β-PEA[b])		Tyr.[b])		Putr.[b])	
		I	II	I	II	I	II
p-chloromercuribenzoate	$2 \cdot 10^{-4}$	0	—9	—	—13	—5	—
o-iodosobenzoate . . .	$4 \cdot 10^{-3}$	—17	—19	—	—22	0	—
monoiodoacetate . . .	$2 \cdot 10^{-3}$	0	0	—	0	0	—
hydrazine · HCl	$2 \cdot 10^{-5}$	84	—	—	—	89	—
semicarbazide · HCl . .	$2 \cdot 10^{-5}$	85	—	—	—	95	—
hydroxylamine · HCl . .	$2 \cdot 10^{-5}$	86	—	—	—	90	—
maleic hydrazide . . .	$2 \cdot 10^{-3}$	71	90	—	89	81	93
maleic hydrazide . . .	$2 \cdot 10^{-4}$	62	72	—	70	77	91
maleic hydrazide . . .	$2 \cdot 10^{-5}$	40	8	—	17	50	9

a) Final concentration. — b) Inhibition (%) after 20 minutes with β-PEA resp. tyramine resp. putrescine. Negative values indicate stimulation.

Each of the Warburg vessels contained 0.5 ml of enzyme from the cotyledonless seedling of *Glycine max* (Enzyme I), or from the cotyledon of *Pisum sativum*-seedling (Enzyme II), 1.0 ml of phosphate buffer (10^{-1} M, pH = 7.6) as the case of putrescine and of tyramine, or 1.0 ml of Na_2HPO_4 (10^{-1} M) as the case of β-phenylethylamine and 0.5 ml of inhibitor in the main chamber, and the substrate (0.5 ml) in the sidearm. Final concentrations; tyramine · HCl and β-phenylethylamine · HCl (β-PEA), $2 \cdot 10^{-2}$ M; putrescine · 2 HCl, 10^{-2} M. Temp. 30° C.

The present communication describes some aspects of MH as a carbonyl reagent. The results of my experiments with the plant amine oxidase are as follows. As shown in the Table, the plant amine oxidase is not inhibited by some typical