

TEMPERATURE RISE IN ARTIFICIAL AND BIOLOGICAL CELLS DUE TO  
ULTRASONIC ABSORPTION

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The activity of immobilized enzymes is influenced by ultrasonic waves. Among others this effect could be explained by a ultrasonically produced temperature rise within the carrier material.

To estimate this temperature increase theoretically the time independent heat conduction equation is solved for spherical bodies in an ultrasonic field. The particles are suspended in a liquid of constant temperature. The boundary conditions correspond to Newton's Cooling Law.

As a result the temperature profil along the particle radius in dependence on the sound intensity will be presented.

The numerical calculations are extended to particles of the size of biological cells, too.