

Murine head & neck applicator

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Goals

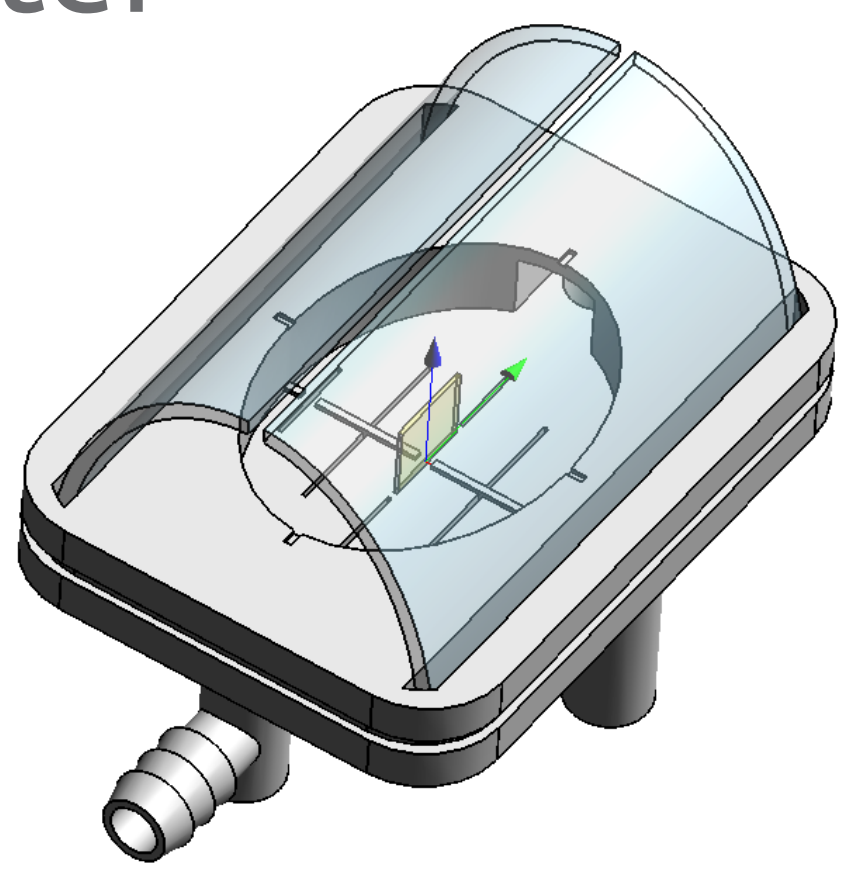
Hyperthermia: Locally heating tissue as cancer therapy enhancement

Developing a **prototype device** for animal trials

Antenna operation at **2.45 GHz**

Hot spot focus size **80 - 100 mm³**

Antenna **partially submerged** in water



Methods

FDTD **simulation based** antenna design
-SEMCAD X and CST

Pennes bioheat simulation to determine result of energy deposition (**SAR**)

Antenna features

Buried feed lines to stabilize characteristics with the water level

Matched to **50Ω**

Return loss
 $S_{11} < -15\text{dB}$

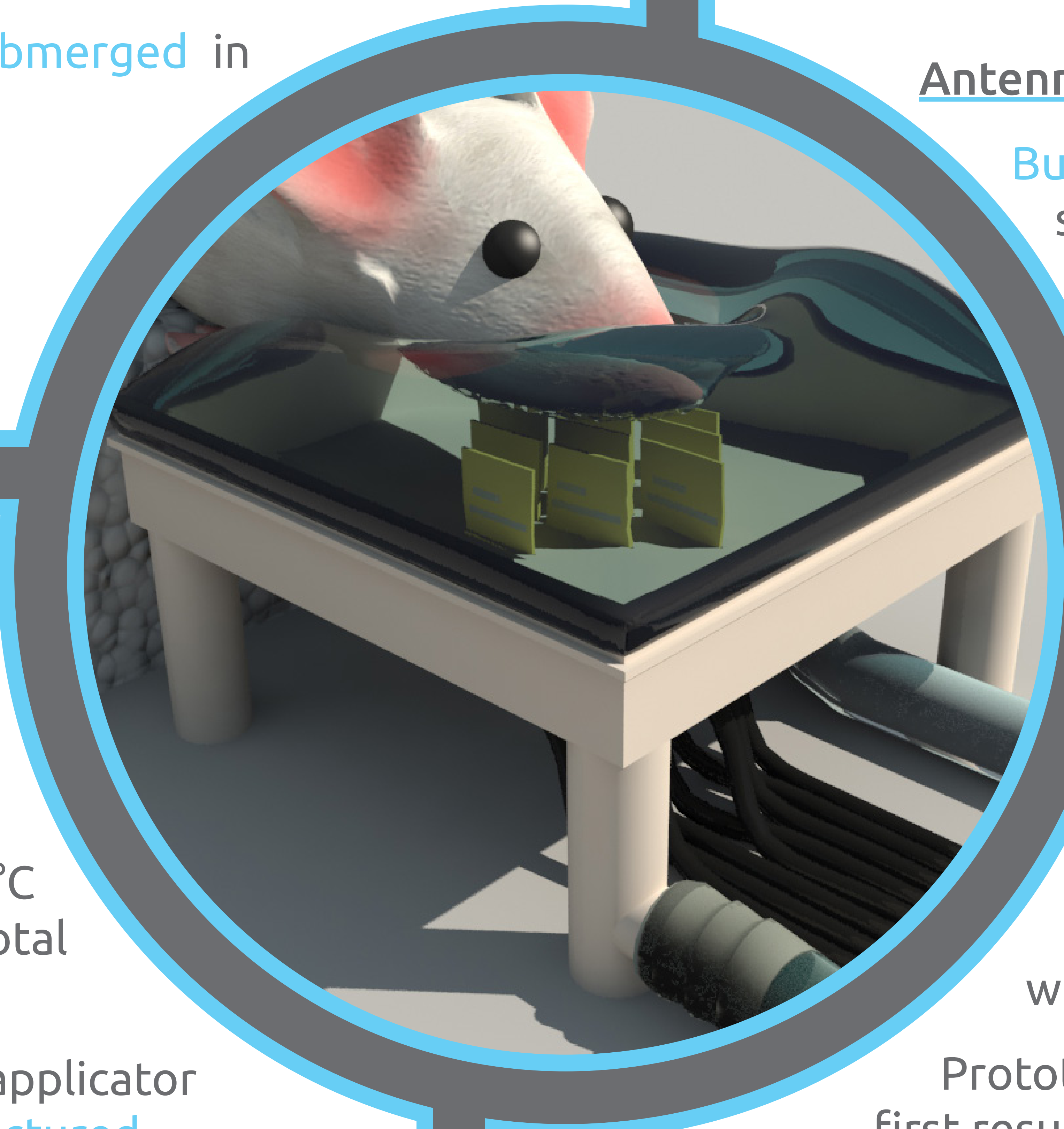
Results

S_{11} **target met**

Stable matching for varying water levels

Heating to **42°C** possible with **5W total input**

Prototype of applicator designed and **manufactured**

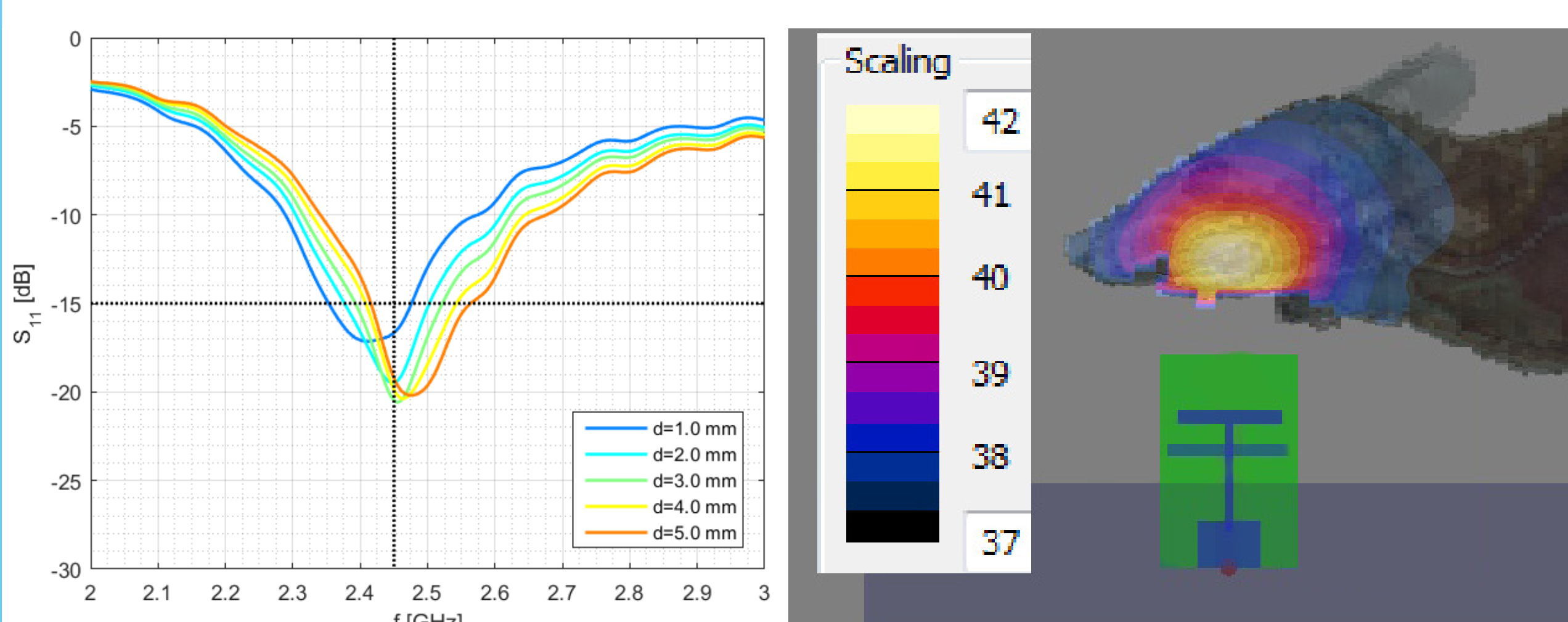
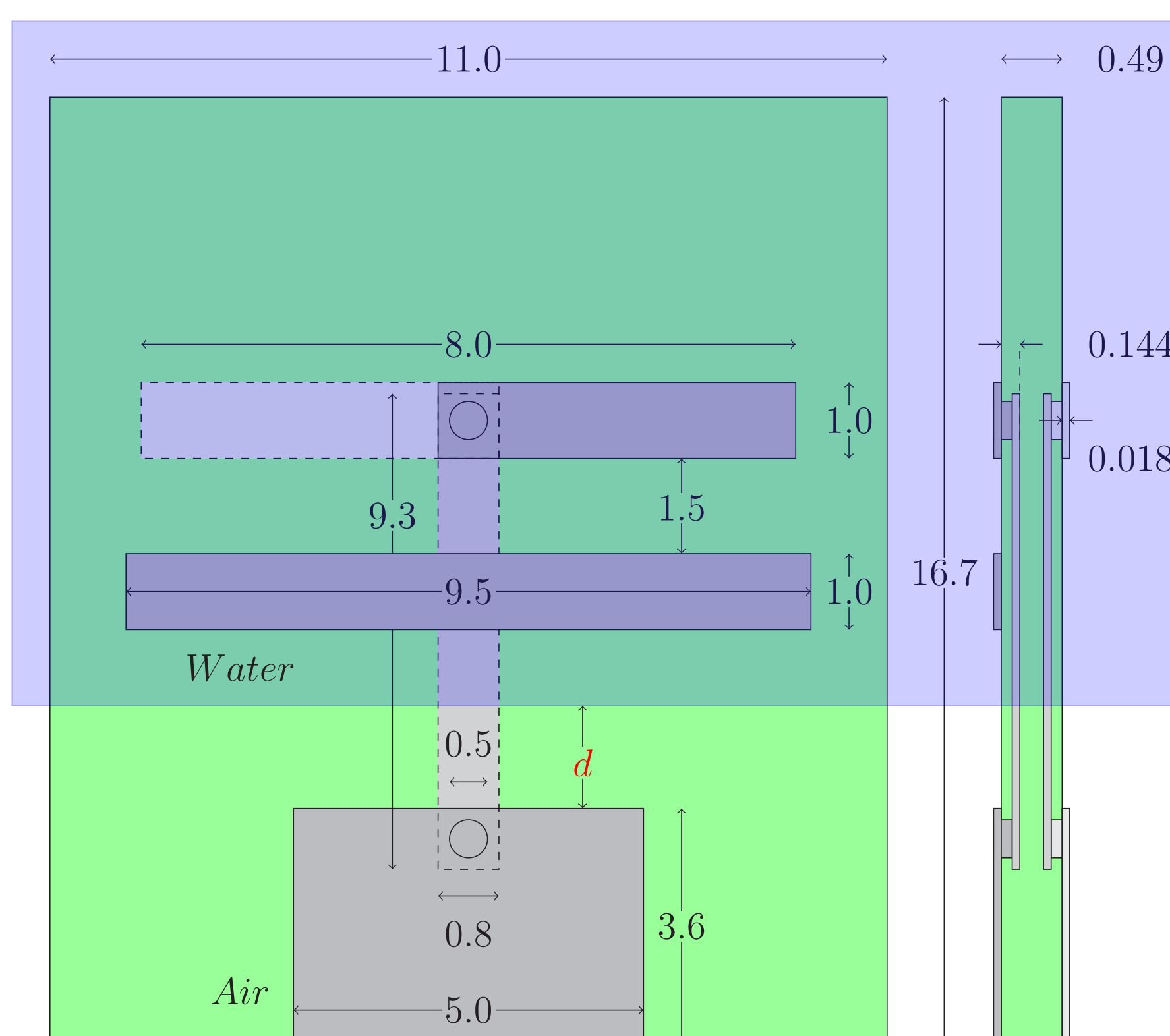
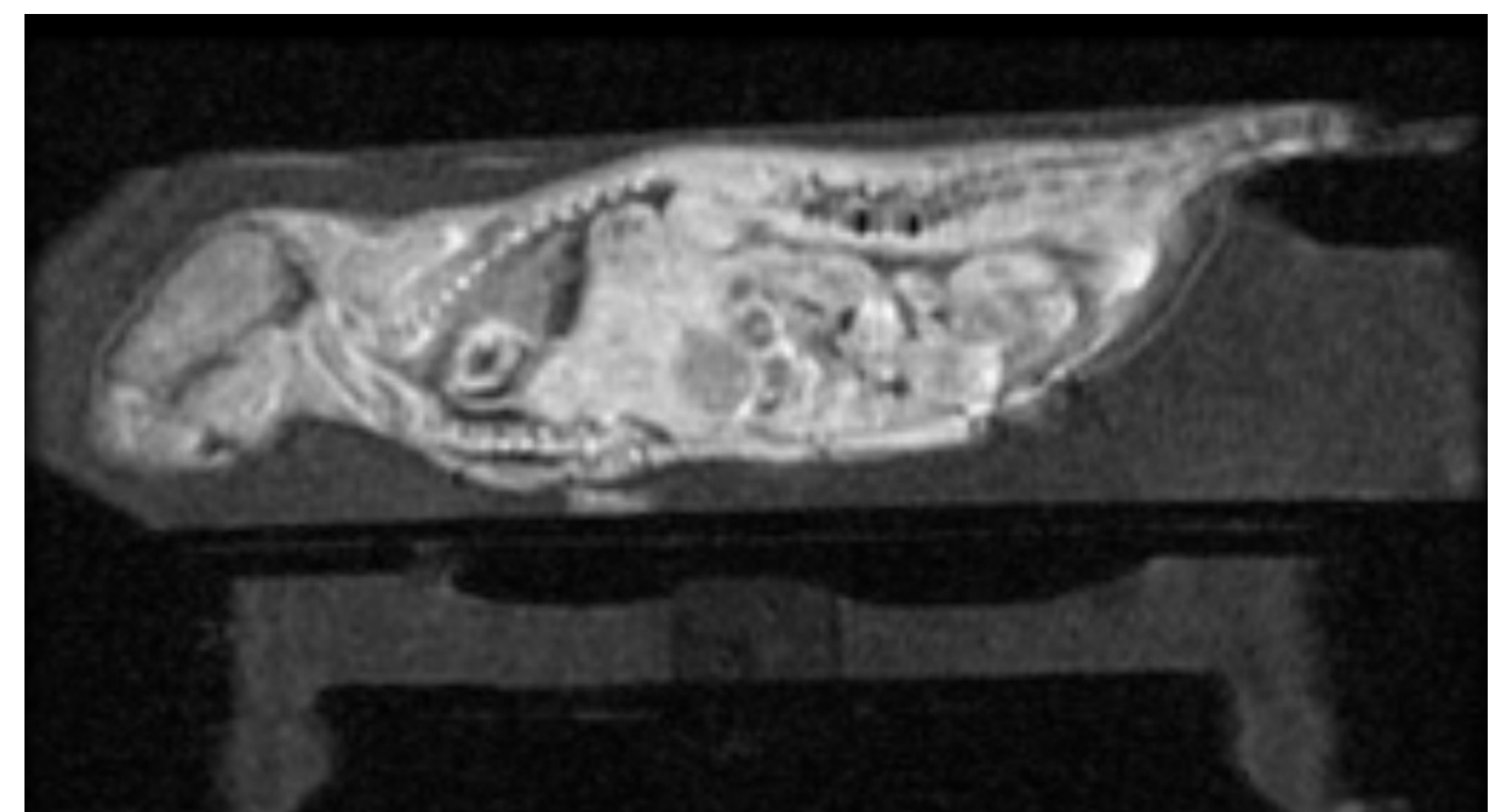


Work in Progress

Heating **experiments** with phantoms

Prototype **MRI compatibility**
-first results promising

Test device **operation in MRI scanner**



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