جامعة الملك عبدالله
للعلوم والتقنية
King Abdullah University of
Science and Technology

COMSOL
CONFERENCE
2015 GRENOBLE

MEMS Electrostatic Acoustic Pixel

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Outline

- Introduction
- Digital Sound Reconstruction
- Design and Simulation
- Future Work & Conclusions

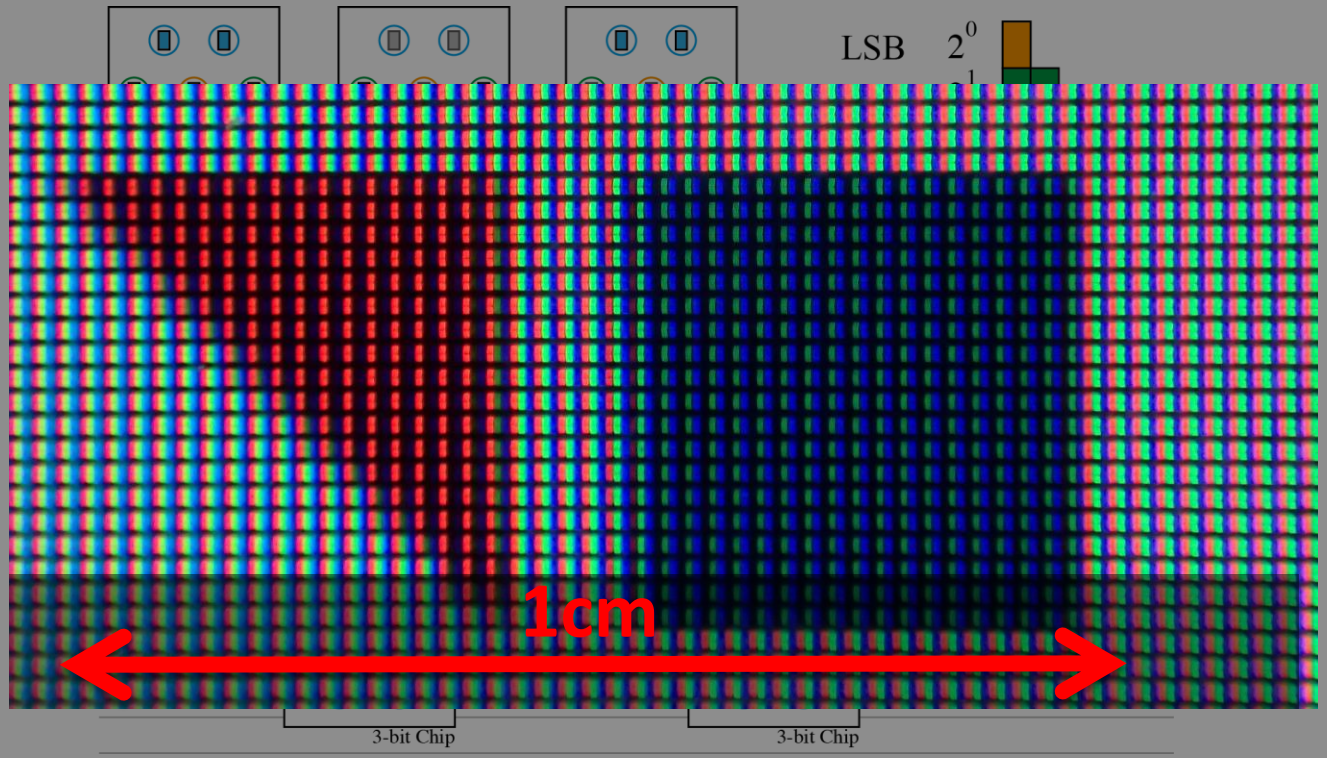
Introduction

- The world has evolved to a point where digital media and electronics play an important role in everyday life.
- Improvements on components such as speakers, microphones, sensors and cameras among others are in high demand.
- These components require improved characteristics (i.e. smaller dimensions, low power consumption and better quality) in order to keep up with the technological evolution.

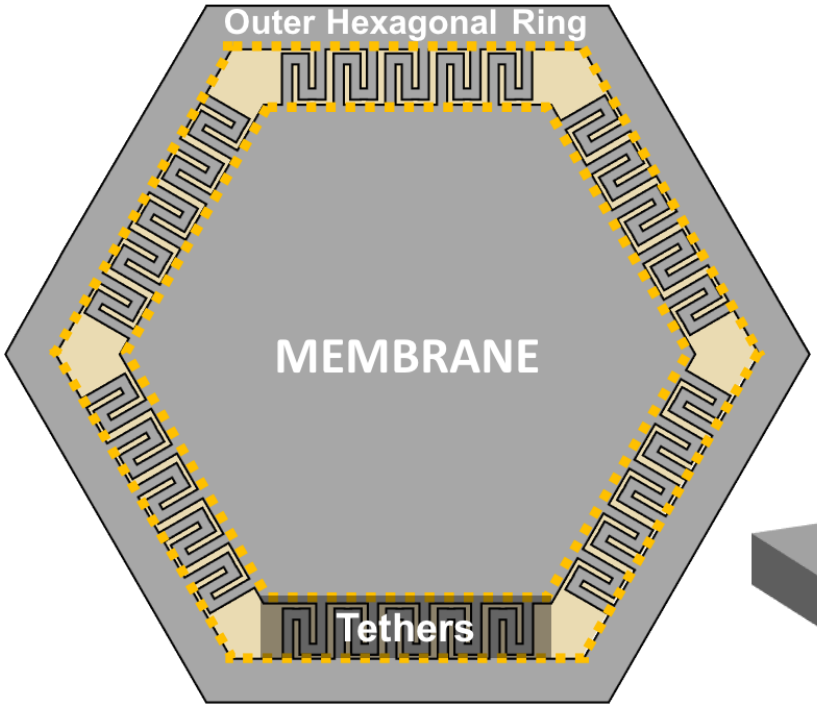
Same transducer design

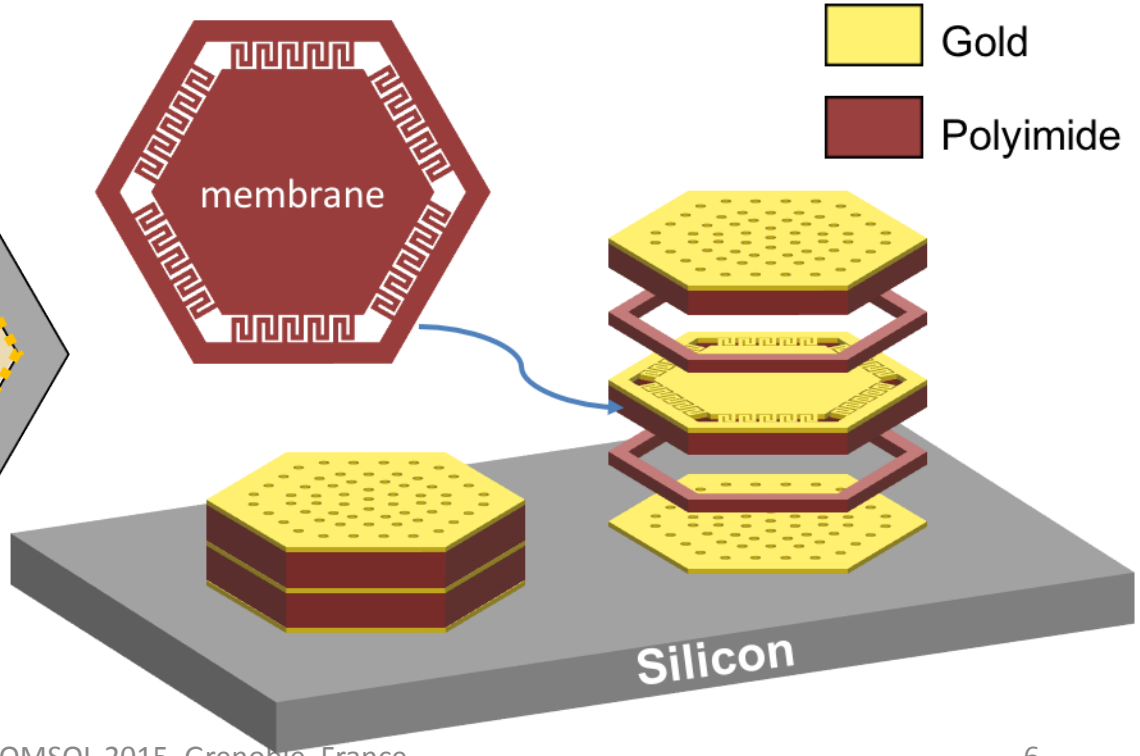
References 1-5

Digital Sound Reconstruction



Design & Simulation

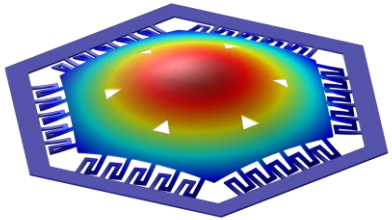




Design & Simulation

FIRST 6 MODES – EIGENFREQUENCIES [Hz]

Eigenfrequency=9417.5



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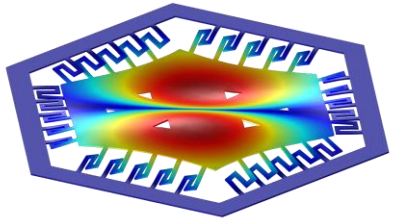

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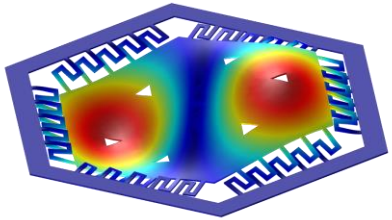
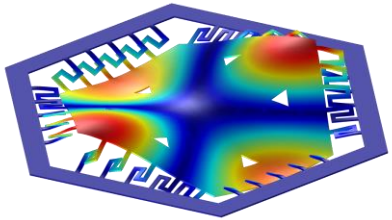


Eigenfrequency=33474



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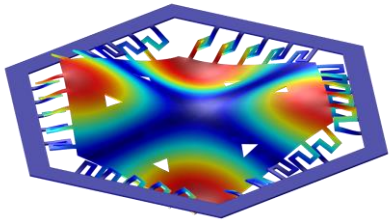

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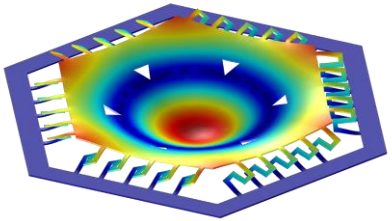
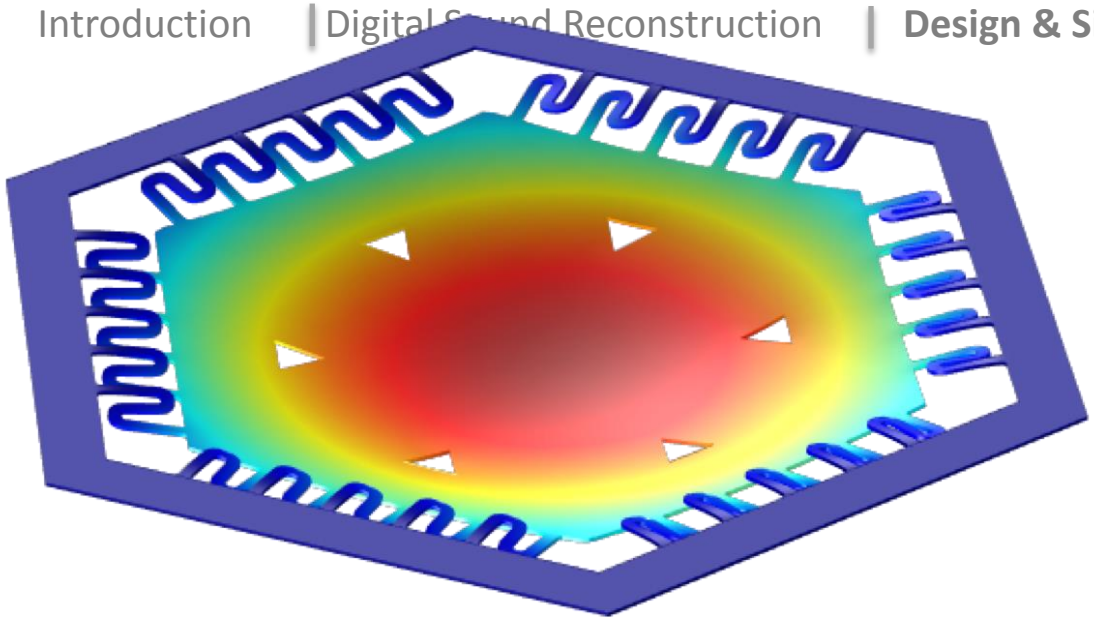
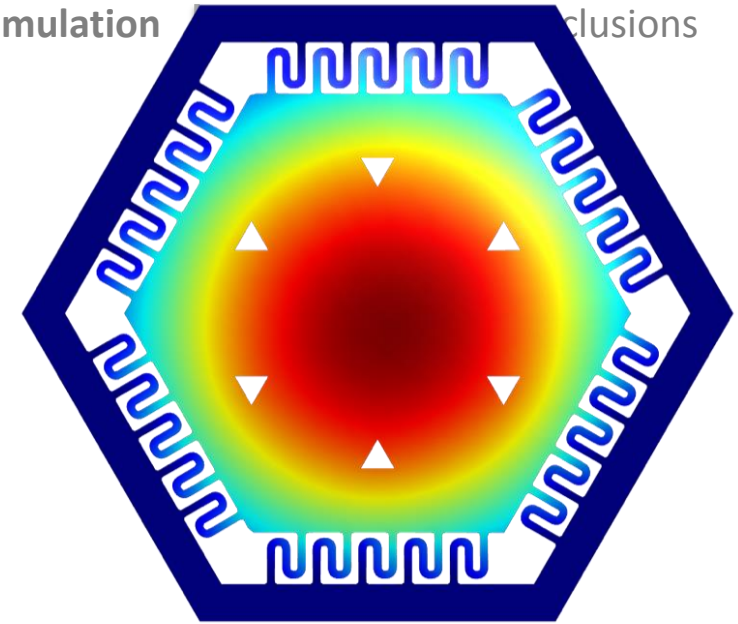
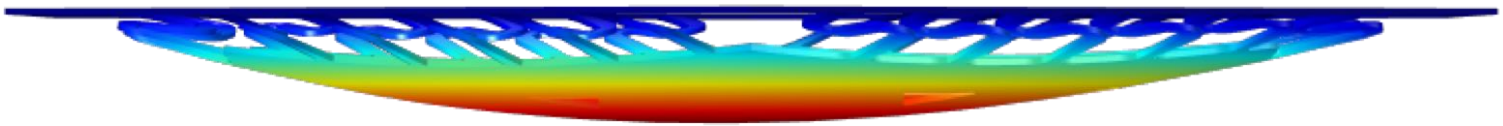


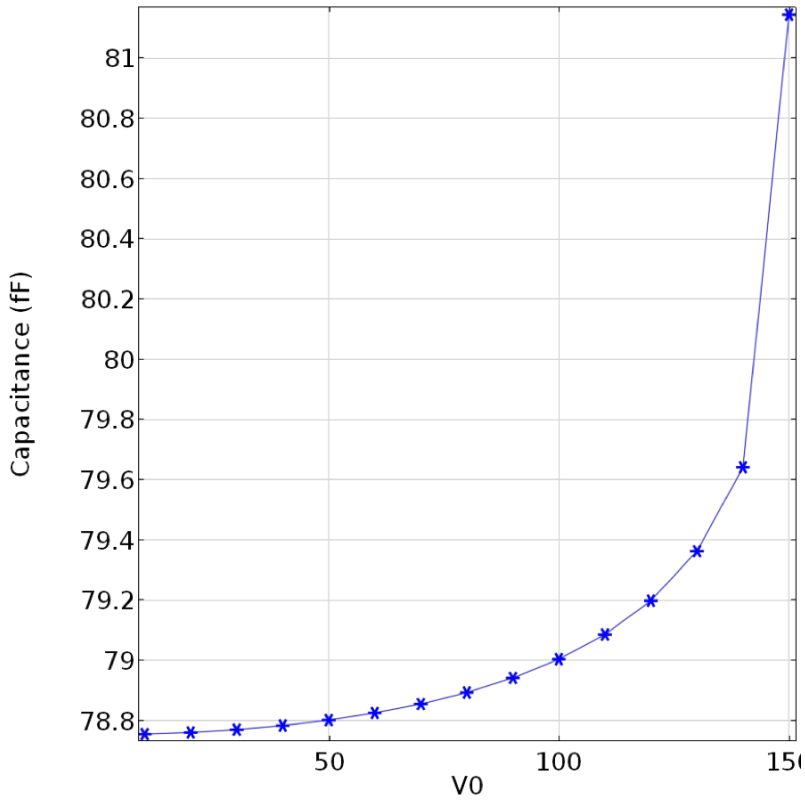
Design & Simulation

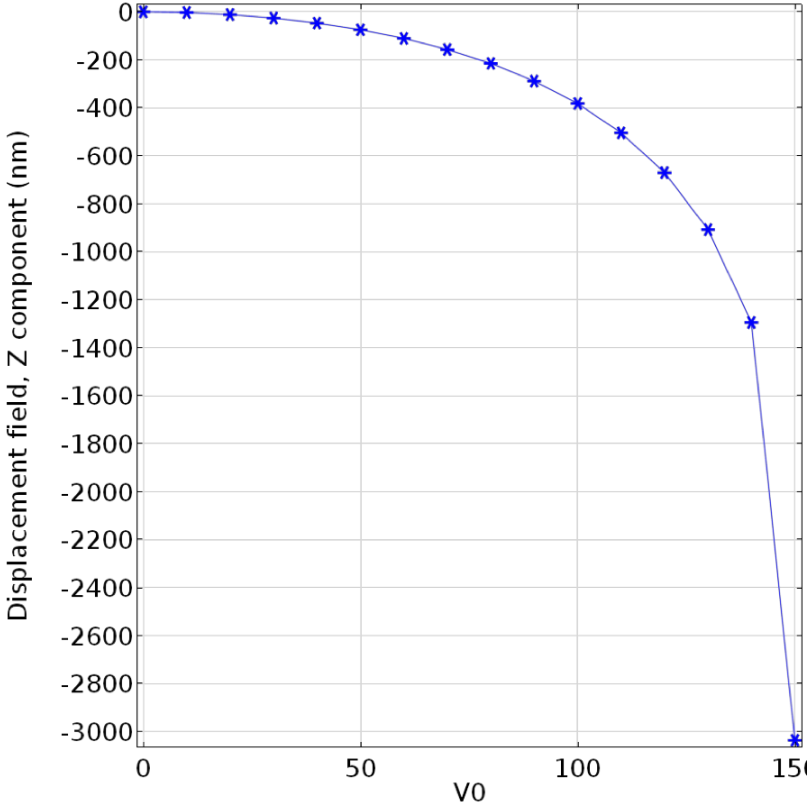






Design & Simulation





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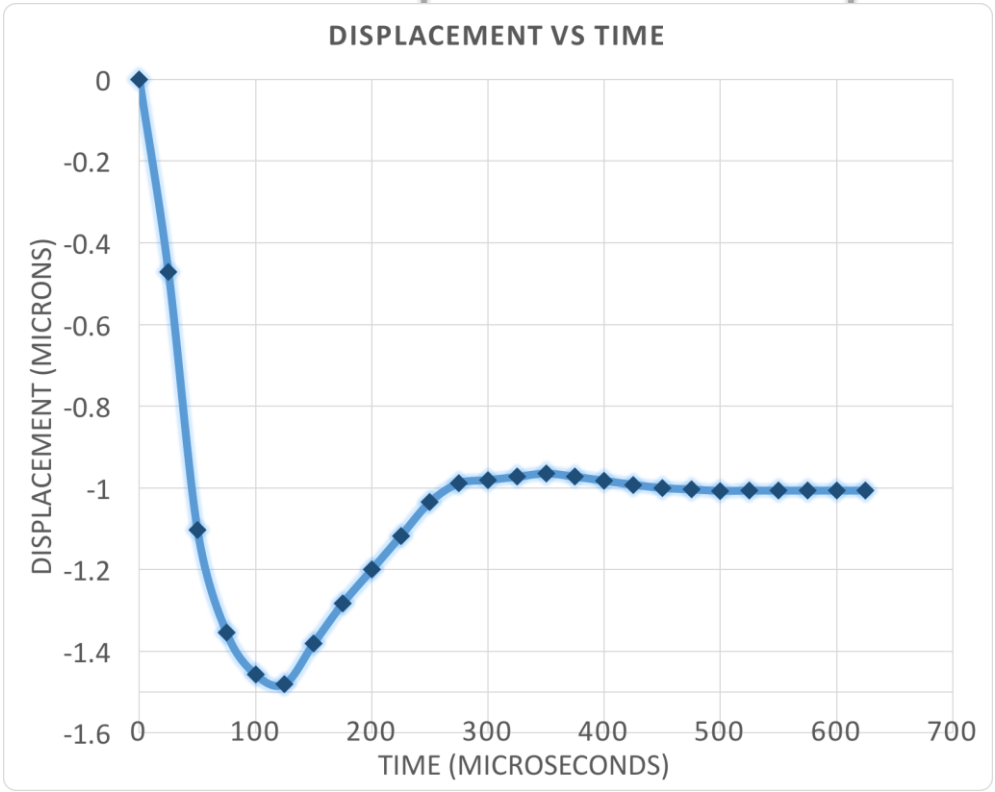

Conclusions

- COMSOL helped us to have a better understanding of the proposed system.
- We are currently characterizing the fabricated chips.
- Future steps is the simulation of the full chip with the array of membranes

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Thank you!

ANY QUESTIONS?