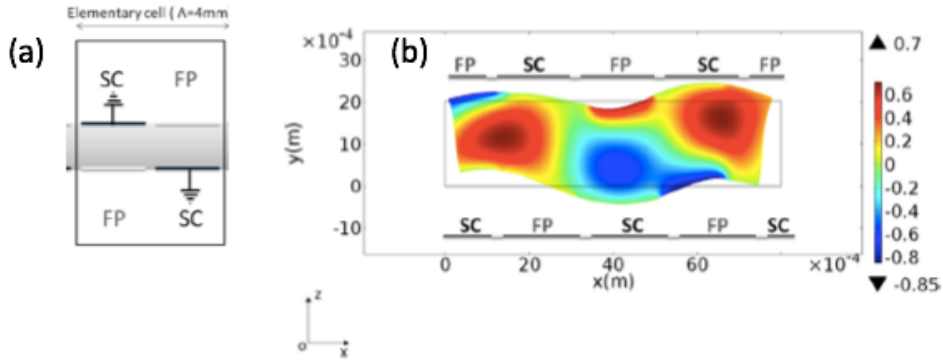
Phononic crystals

Phononic crystals are periodically structured materials. They support elastic wave (phonon) propagation and exhibit various and exciting features, one of these is the negative refraction. Using a **Metal Water Structure**, this property was used successfully to produce images from a spherical source. The optimal focalization was observed around 75 kHz [APL 2013 IEEE UFFC 2014]. **Filtering effect** is another property widely used. Targeted applications are **SAW** or **BAW** devices in the GHz frequency range.

Our investigations concern **piezoelectric plates** having millimetric thicknesses, with a set of periodic electrodes. Electric boundary conditions are used to control Bragg stop bands [APL 2016]. This work is made with the LOMC (Le Havre) in the frame of the PhD of N. Kherraz founded by the ANR (MIRAGES ANR-12-BS09-0015) and Région Centre-Val de Loire.



Figures: Calculated color map of the electric potential and mode deformation shape (b) for the electric boundary configuration (a). Case of a 2 mm thick infinite Pz26 plate at 265 kHz.