Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

**Designing a Micromixer for Rolling Circle Amplification in Cancer Biomarker Detection**[1] HAYRIYE ALTURAL, Department of Electrical and Computer Engineering, Boston University — Rolling circle amplification (RCA) is an alternative method to the Polymerase Chain Reaction based amplification for point-of-care (POC) diagnosis. In future personalized cancer diagnostic for POC applications, smaller, faster and cheaper methods are needed instead of costly and time-consuming laboratory tests. Microfluidic chips can perform the detection of cancer biomarkers within less analysis time, and provide for improvement in the sensitivity and specificity required for biochemical analysis as well. Rapid mixing is essential in the chips used in cancer diagnostic. The goal of this study is to design a micromixer for rapid RCA-based analysis and develop the assay time in cancer biomarker detection. By combining assays with micromixers, multi-step bioreactions in microfluidic chips may be achieved with minimal external control. Here, simulation results related to the micromixer are obtained by COMSOL software.

[1]The Scientific and Technological Research Council of Turkey (TUBITAK) is acknowledged for granting of H. Altural postdoctoral study in the framework of TUBITAK-BIDEB 2219-International Postdoctoral Research Scholarship Program.

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Date submitted: 14 Nov 2014 Electronic form version 1.4