



# PROJECT FINAL Project ATTACHMENT

**Grant Agreement Number: 605889**

**Project acronym: SELFPOCNAD**

**Project title: DEVELOPMENT OF A POINT OF CARE DETECTION DEVICE AND  
SELF SAMPLING DEVICE FOR CERVICAL CANCER SCREENING**

**Funding Scheme: FP7-BSG-SME**

**Date of latest version of Annex I against which the assessment will be made: 14/11/13**

**Periodic report: 1<sup>st</sup> (P1 – 0-9 Months)**

**Period covered: from 1<sup>st</sup> January 2014 to 31<sup>th</sup> September 2014**

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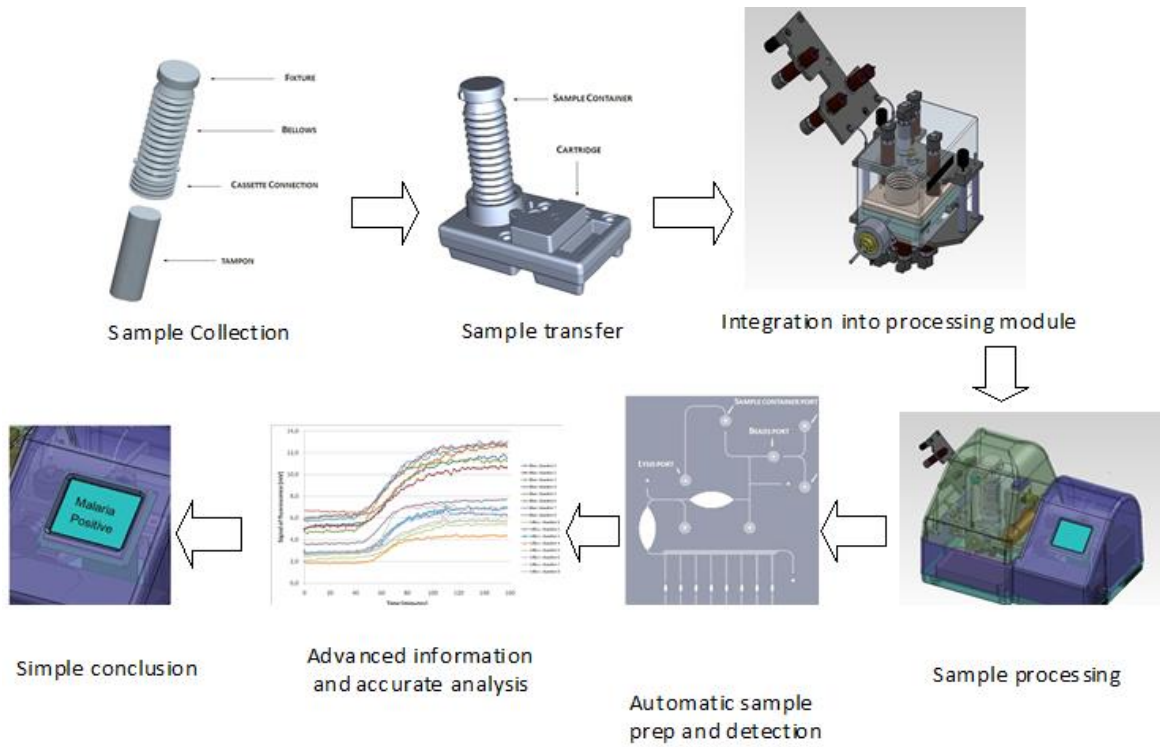
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## 2. The Complete SelfPocNad System



### 3. Dissemination Activities

#### 3.1 Project Logo



### 3.2 Demo Project Website



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The **selfPOCNAD Demonstration** project is developing a commercial Point of Care Detection Unit, Microfluidic Chip, and Self-Sampling Device for Cervical Cancer Screening

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### selfPOCNAD Demonstration

**Project Summary**

We have successfully concluded a Research for SMEs project and shown that rapid ("same day") Invasive Cervical Cancer (ICC) screening of self-taken patient samples is possible.

The next project is to develop a commercial pre-production prototype point of care test for invasive cervical cancer (ICC). This easy-to-use lab-on-a-chip system (selfPOCNAD) will enable women to collect samples in the comfort of their own homes and take them into a GP surgery for testing and provision of immediate results. This will dramatically increase compliance of women with the ICC screening programs will and drastically decrease the ICC incidence and save lives.

ICC is the second most common cancer in women. Each year, there are over 470,000 new cases globally. Of these, 33,000 are in the EU. Once the disease is established, it is hard to cure, so each year 233,000 women die -





**Project Archive**  
To view selfPOCNAD archive information and results, please visit [res.selfpocnad.eu](https://res.selfpocnad.eu)

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## Documents

-  **Pack and Go Assy - 12-09-14** — by [Jo Smart](#) — last modified Sep 14, 2014 01:19 PM  
Assembly drawing with associated files from research Pocnad project
-  **Meetings** — by [Mick Parmar](#) — last modified Oct 13, 2014 11:32 AM
-  **DELIVERABLES** — by [Mick Parmar](#) — last modified Oct 13, 2014 11:48 AM
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-  **KO Meeting** — by [Mick Parmar](#) — last modified Oct 13, 2014 11:32 AM
-  **3 Month Meeting** — by [Mick Parmar](#) — last modified Oct 13, 2014 11:34 AM
-  **6 Month Meeting** — by [Mick Parmar](#) — last modified Oct 13, 2014 11:40 AM
-  **9 Month Meeting** — by [Mick Parmar](#) — last modified Oct 13, 2014 11:43 AM
-  **REA Review\_Dec 2014** — by [Mick Parmar](#) — last modified Oct 13, 2014 11:44 AM
-  **Technical Meetings** — by [Mick Parmar](#) — last modified Oct 13, 2014 11:45 AM

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## News

### selfPocnad presented at MicroTAS conference in Freiburg, Germany, October 2013

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### Roadmap established for the production of selfPOCNAD instrument and cartridge products

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### Significant Interest in selfPOCNAD technology in Kenya, Uganda, Rwanda, Ghana and DR Congo

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### Blatt et al compared cervical cancer screening confirm that self POCNAD should be used as the medical gold standard

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### Wettre and Sørbye study indicates that selfPOCNAD may be the

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## **Conclusion of the selfPOCNAD Research for SMEs project**

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## **24 Month Meeting**

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## **18 Month Meeting**

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## **15 Month Meeting**

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## **Mid Term Review Meeting**

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## **Month 9 Meeting**

The selfPOCNAD Month 9 Meeting took place on 15 and 16 October 2014 at INNLAB.

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## **Month 6 Meeting**

The month six meeting took place at Pera Technology on 1 July and 2 July 2014.

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## **Month 3 Meeting**

The month three meeting took place at DELTA on 8 April 2014, which all of the partners attended.

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## **Project Kick Off Meeting**

The project kick off meeting took place on 21 and 22 January 2014.

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The research leading to these results has received funding from the European Union Seventh Framework Programme (FP7/2007-2013 FP7/2007-2011 under Grant Agreement n° 605889).

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## Conclusion of the selfPOCNAD Research for SMEs project:

We have successfully concluded a Research for SMEs project and shown that rapid ("same day") Invasive Cervical Cancer (ICC) screening of self-taken patient samples is possible. Our novel solution consists of two parts; (i) a self-sampling device used by patients in the privacy of their own home, and (ii) a detection unit with disposable sample container and micro fluidics chip situated at POC to where the patients will deliver their samples. The detector system prepares the sample, and then performs the test to produce robust ICC screening results in less than 3 hours. These are communicated to the patients the same day, relieving the unnecessary anxiety that exists today when patients have to wait up to a week for their results and allowing any necessary treatment to start. This is far quicker than alternative testing regimen, where results are rarely communicated to the patient within a week. We now plan to refine the output from the initial project and further prove the concept in a real world, POC environment. We intend to demonstrate the complete selfPOCNAD solution, with a detailed business case, market entry strategies and routes to manufacture shown in detail. By demonstrating a proven innovation, we will identify a suitable global partner who can license selfPOCNAD, commercialise it and market it across the globe with a return to the consortium. The selfPOCNAD consortium represents four complementary companies from the original project, with capabilities for further refining and developing the technologies, passed to us by the three RTDs in the first project.

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## Partners

The selfPOCNAD Demonstration project partners

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### Project Archive

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### 3.3 Research Project Website



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Welcome to the selfPOCNAD project website

*The selfPOCNAD project is researching the Development of a Point of Care Detection Unit, Microfluidic Chip, and Self-Sampling Device for Cervical Cancer Screening.*

#### Project Aim:

In SelfPOCNAD we propose to develop an industrial prototype for a rapid ("same day") platform for cervical cancer screening using patient collected samples. The platform includes automated sample pre-treatment, preparation, analysis and target detection.

The industrial prototype will use a limited quantity of sample material so as to avoid clogging of the sample preparation section of the chip. It will make use of the same detection method that is used in PreTect HPV-Proofer; Nucleic Acid Based Amplification (NASBA). The introduction of this platform in doctors' offices (Point of Care) is expected to significantly improve compliance of women with Cervical Cancer screening programs. This increased compliance may drastically decrease Invasive Cervical Cancer (ICC) and save lives.

ICC is the second most common cause of cancer in women. Each year there are more than 470.000 new cases globally; 33.000 of these in the EU. Once the disease is established, it is difficult to cure, leading to the death of 233.000 women annually – 15.000 of these in the EU. However, if discovered in the early stages, it is preventable (and treatable). Some EU member states have a well organized screening and prevention program, but the weak link is the compliance with the program. Therefore means of improving the compliance, especially in new member states, may save the lives of 3 – 5000 European women each year.

#### Conclusion of the selfPOCNAD Research for SMEs project:

We have successfully concluded a Research for SMEs project and shown that rapid ("same day") Invasive Cervical Cancer (ICC) screening of self-taken patient samples is possible. Our novel solution consists of two parts; (i) a self-sampling device used by patients in the privacy of their own home, and (ii) a detection unit with disposable sample container and micro fluidics chip situated at POC to where the patients will deliver their samples. The detector system prepares the sample, and then performs the test to produce robust ICC screening results in less than 3 hours. These are communicated to the patients the same day, relieving the unnecessary anxiety that exists today when patients have to wait up to a week for their results and allowing any necessary treatment to start. This is far quicker than alternative testing regimen, where results are rarely communicated to the patient within a week. We now plan to refine the output from the initial project and further prove the concept in a real world, POC environment. We intend to demonstrate the complete SelfPOCNAD solution, with a detailed business case, market entry strategies and routes to manufacture shown in detail. By demonstrating a proven innovation, we will identify a suitable global partner who can license SelfPOCNAD, commercialise it and market it across the globe with a return to the consortium. The SelfPOCNAD consortium represents four complementary companies from the original project, with capabilities for further refining and developing the technologies, passed to us by the three RTDs in the first project.

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  - INNLab BV, Netherlands
  - microLIQUID sl, Spain
  - Nor-Tek Teknologisenter AS, Norway
  - IKERLAN S. Coop, Spain
  - University College of Vestfold, Norway
  - European Cervical Cancer Association, Belgium
- [further details on partners](#)

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## Project Results

### Conclusion of the selfPOCNAD Research for SMEs project:

We have successfully concluded a Research for SMEs project and shown that rapid ("same day") Invasive Cervical Cancer (ICC) screening of self-taken patient samples is possible. Our novel solution consists of two parts; (i) a self -sampling device used by patients in the privacy of their own home, and (ii) a detection unit with disposable sample container and micro fluidics chip situated at POC to where the patients will deliver their samples.

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### Project Results

Deliverable D1.1 Trends at POC and ICC screening in EU

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### 3.4 Project Banner



**Novel Point of Care  
microfluidic chip unit and  
self-sampling device for  
cervical cancer screening**

Invasive Cervical Cancer (ICC) is the second most common cause of cancer in women. Each year there are more than 470 000 new cases globally; 33 000 of these in the EU. However, if discovered in the early stages, it is preventable (and treatable).

selfPOCNAD aims to provide a rapid (same day) platform for cervical cancer screening using samples collected by the patient, with a self-sampling device based on Nucleic Acid Detection.

**The platform includes:**

- automated sample pre-treatment
- preparation
- analysis
- target detection



### 3.5 Other Dissemination Activities

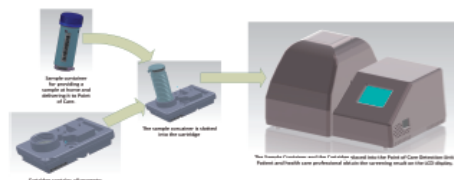
## SelfPOCNAD

### Point of Care Detection Unit, Microfluidic Chip and Self-Sampling Device for Cervical Cancer Screening

The need for non-invasive cervical cancer screening system

Invasive Cervical Cancer (ICC) is the second most common cause of cancer in women. Each year there are more than 470 000 new cases globally, 33 000 of these in the EU. Once the disease is established, it is difficult to cure, leading to the death of 233 000 women annually, 15 000 of these in the EU. However, if discovered in the early stages it is treatable. Some EU member states have a well-organized screening and prevention program, but the weak link is the compliance with the program. The existing cytology test, the 'Pap' test, is invasive, as doctor or nurse has to collect samples of cells from the cervix. Women have to make an appointment for the procedure, plus a second one to receive their results, often 4 weeks later.

Introducing a convenient and non-invasive sampling system that gives results in the same day would increase the compliance of EU women to national screening programmes which may save the lives of 3–5000 European women every year.



#### The Solution

The final concept for the industrial platform for rapid "same day" cervical cancer screening has been completed during the first part of the project. The consortium decided to divide the platform into three modules:

- Disposable Sample Container to provide a sample
- Disposable Cartridge containing reagents needed for the assay
- Point of Care Detection Unit

#### The Benefits

The introduction of this platform in doctors' offices (POC) is expected to significantly improve the level of compliance of women with Cervical Cancer screening programs. The cartridge and detection unit can be used (with different sets of reagents) as a platform technology for nucleic acid detection of other disease states. Point of Care Detection Unit

#### Our project partners:

- NORCHIP AS, SME participant, Norway
- DELTA, SME participant, Denmark
- INNLAB BV, SME participant, Netherlands
- NOR-TEK TEKNOLOGISENTER, RTD participant, Norway
- MICROLIQUID SL, SME participant, Spain
- ICERLAN S. COOP, RTD participant, Spain
- UNIVERSITY COLLEGE OF VESTFOLD, RTD participant, Norway
- EUROPEAN CERVICAL CANCER ASSOCIACION, SME participant, France

Applying science in a commercial world



The research in this project has received funding from the European Commission's FP7 R4SME Programme under the Grant Agreement No. 262243.

## A comprehensive evaluation of the accuracy of cervical pre-cancer detection methods in a high-risk area in East Congo

**S Hovland<sup>\*1</sup>, M Arbyn<sup>2</sup>, AK Lie<sup>3</sup>, W Ryd<sup>4</sup>, B Borge<sup>3</sup>, EJ Berle<sup>5</sup>, H Skomedal<sup>1</sup>, TM Kadima<sup>6</sup>, L Kyembwa<sup>6</sup>, EM Billay<sup>6</sup>, D Mukwege<sup>7</sup>, RB Chirimwami<sup>8</sup>, TM Mvula<sup>8</sup>, PJ Snijders<sup>9</sup>, CJLM Meijer<sup>9</sup> and F Karlsen<sup>1</sup>**

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**BACKGROUND:** Given the high burden of cervical cancer in low-income settings, there is a need for a convenient and affordable method for detecting and treating pre-cancerous lesions.

**METHODS:** Samples for comparing the accuracy of cytology, virology and histology were collected. Identification of HPV E6/E7 mRNA was performed using PreTect HPV-Proofer. HPV DNA detection was performed by GP5 +/6 + PCR, followed by reverse line blot (RLB) for typing.

**RESULTS:** A total of 343 women, aged 25–60 years, attending gynaecological polyclinics in DR Congo were included for sample enrolment. The test positivity rate was conventional and liquid-based cytology (LBC) at cutoff ASCUS+ of 6.9 and 6.6%, respectively; PreTect HPV-Proofer of 7.3%; and consensus DNA PCR for 14 HR types of 18.5%. Sixteen cases of CIN2+ lesions were identified. Of these, conventional cytology identified 66.7% with a specificity of 96.2%. LBC identified 73.3% with a specificity of

## DR DENNIS MUKWEGE FROM DR CONGO – 18 International Prizes

1. Republic of France "Special Human Rights Prize 2007" taken to [Panzi Hospital](#) in Bukavu by the Secretary of Foreign Affairs [Rama Yade](#) (June 2008)
2. [UN Human Rights prize](#) (New York, December 10, 2008)<sup>[11]</sup>
3. [Qlof Palme Prize](#) (Sweden, January 2009)<sup>[12]</sup>
4. African of the Year (Nigeria, January 2009), awarded by [Daily Trust](#)<sup>[12]</sup>
5. Chevalier de la [Légion d'Honneur](#) by the French government (Kinshasa, November 2009) by French Ambassador Pierre Jacquemot.
6. Van Heuven Goedhart-Award (June 2010) from the Netherlands Refugee Foundation ([Stichting Vluchteling](#))
7. Honorary Doctorate by the faculty of medicine at [Umeå University](#)<sup>[13]</sup> (Sweden, June 2010)
8. The [Wallenberg Medal](#) from the [University of Michigan](#) (October 2010)
9. [The King Baudouin International Development Prize](#) (Brussels, May 24, 2011)<sup>[14]</sup> by the King of Belgium Albert II.
10. [Clinton Global Citizen Award](#) for Leadership in Civil Society (New York, September 22, 2011)<sup>[15]</sup> by President Bill Clinton.
11. [Chevalier de la Légion d'Honneur Française](#) (Panzi, July 8, 2013) brought to [Bukavu](#) by the First Lady of France [Valérie Trierweiler](#) and the Minister of Francophonie [Yamina Benguigui](#).
12. [Human Rights First Award](#) (August 5, 2013)<sup>[16]</sup>
13. [Right Livelihood Award](#) (September 26, 2013);<sup>[17]</sup> also known as "The Alternative Nobel Prize"
14. "Prize for Conflict Prevention" by the [Fondation Chirac](#) (Paris, October 10, 2013) <sup>[1]</sup> honored by the presence of 2 French Presidents [Jacques Chirac](#) and [François Hollande](#)
15. [Honorary degree](#) from [Université catholique de Louvain](#) in Belgium (February 3, 2014)<sup>[18]</sup> along with [Lawrence Lessig](#) and [Jigme Thinley](#)
16. The [Hillary Rodham Clinton Award](#) in Washington DC (February 26, 2014) at [Georgetown University](#) for Advancing Women in Peace and Security <sup>[19]</sup> along with the British Secretary of State for Foreign Affairs [William Hague](#)
17. The Inamori Ethics Prize from the [Case Western Reserve University Inamori Center](#) for Ethics and Excellence (October 1, 2014)
18. [Sakharov Prize](#) (2014)<sup>[21][20]</sup>



One of the most important studies done by PreTect to confirm cervical cancer technology, was done together with the International Prize winner Dennis Mukwege. The Sakharov Prize was given to Dennis Mukwege the 26th of November 2014 by the EU parliament president Martin Schulz

# A Novel Design of Passive Split and Recombination Micromixer with Zigzag Channel

Hai Le The<sup>1,\*</sup>, Bao Quoc Ta<sup>1</sup>, Hoa Le-Thanh<sup>2</sup>, Frank Karlsen<sup>2</sup>, and Trung Nguyen Thoi<sup>1</sup>

**Abstract**—In this paper, we proposed a novel passive micromixer to provide effective mixing performance even at very low Reynolds number ( $Re$ ). In each mixing unit, the slope angle of trapezoidal channels facilitates the mixing of top-fluid and bottom-fluid, and the zigzag shape significantly enhances the transversal flows. Moreover, our micromixer can create high distortion of fluid streams based on chaotic advection, producing very high mixing efficiency. We conducted numerical study to evaluate mixing performance of our proposed micromixer using COMSOL Multiphysics based on Finite Element Method. The simulation results indicated that our proposed micromixer has high mixing efficiency over 81% for an entire range of Reynolds number from 0.1 to 80. The highest mixing efficiency of ~94% was obtained when  $Re = 20$ , with a moderate pressure drop of ~8.32 kPa. Moreover, when  $Re = 20$ , the mixing efficiency of our proposed micromixer are 5.58 and 4.07 times higher than those of T-shaped micromixer and 3-split rhombic micromixer, respectively. With a small footprint, our proposed micromixer can easily integrate in various microfluidic systems.

## BACKGROUND

For complex analyses such as bio-sample pretreatment, DNA sequencing, RNA synthesis, and enzyme reaction, the well-mixed mixtures of chemical/bio-substances are vitally important in order to provide accurate diagnostics. Therefore, micromixer is an essential component in microfluidics-based lap-on-a-chip (LOC) systems, producing high-quality mixing performance at microscale. Various designs of micromixer

and chaotic advection to provide high mixing efficiency. The mixing performance of our micromixer is evaluated by using COMSOL Multiphysics.

## CURRENT RESULTS

### A. Geometry of our proposed micromixer

Our proposed micromixer composes of cross-shaped inlet and seven mixing units. The mixing unit is in zigzag shape formed by the combination of three trapezoidal channels, that is, two adjacent trapezoidal channels connected together through a trapezoidal cross-section  $A_1$  as shown in Fig. 1(a). An advantage of the trapezoidal channels is to create slope angles and constriction elements in vertical direction, thus top fluid is forced to mix with bottom fluid to provide efficient mixing. One mixing unit is connected to another through two triangular cross-sections  $A_2$  as depicted in Fig. 1(b). As a result, a special structure of mixing channel with small footprint can be created by the connection of mixing units in a repetitive manner. The zigzag channel creates bending of fluid stream, significantly enhancing transversal flow. Moreover, the splitting and recombining of fluid stream generates multiple thin laminar layers, thus accelerating the molecular diffusion process. Our proposed micromixer can also form stretching, twisting, and folding effects of fluid stream based on chaotic advection. These various mixing mechanisms in our proposed micromixer produce high mixing efficiency for

## Master Thesis

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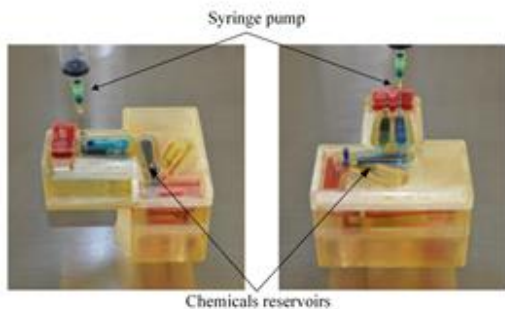
# A Study on Optimal Design and Fabrication of an Effective Passive Micromixer

---

Author:  
Hai Le The

Supervisor:  
Prof. Frank Karlsen

Co-advisor:  
PhD-student Nhut Tran-Minh



Buskerud and Vestfold University College

Master thesis

**Development and Production of an Automatic Pre-treatment System of Difficult Samples used in Point-of-care Diagnostics**

Author:

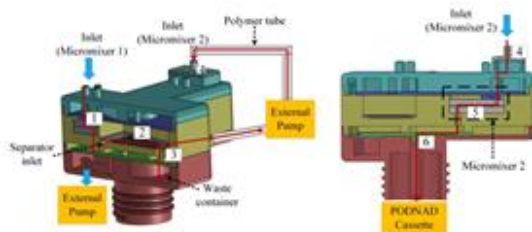
Vy Thi Hoang Nguyen

Supervisor:

Prof. Frank Karlsen

Submitted to the Faculty of Technology and Maritime Science in the partial requirements for the degree of Master of Microsystem Technology

November 2014



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**An efficient passive planar micromixer with ellipse-like micropillars for continuous mixing of human blood**

Nhat Tran-Minh, Tao Dong, Frank Karlsen

Received: January 23, 2014; Received in revised form: May 28, 2014; Accepted: May 28, 2014; Published Online: June 05, 2014

DOI: <http://dx.doi.org/10.1016/j.cmpb.2014.05.007>

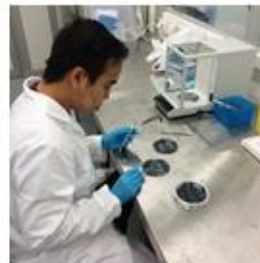
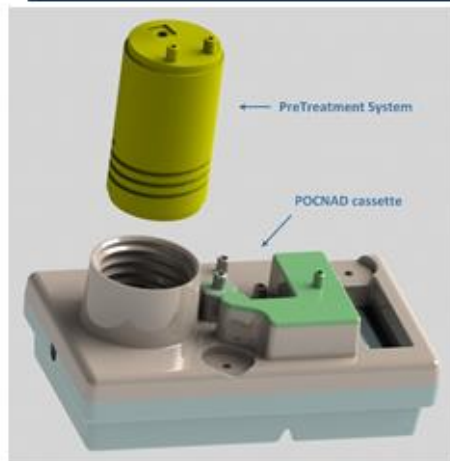
Abstract Full Text Images References

**Highlights**

- The SAR structures result in the reduction of the diffusion distance of two fluids.
- The mixing strength is increased when one stream is injected into the other.
- Fluids flow faster in SAR mixer for rapid mixing and mixing efficiency.

**Abstract**

In this paper, a passive planar micromixer with ellipse-like micropillars is proposed to operate in the laminar flow regime for high mixing efficiency. With a splitting and recombination (SAR) concept, the diffusion distance of the fluids in a micromixer with ellipse-like micropillars was decreased. Thus, space usage for micromixer of an automatic sample collection system is also minimized. Numerical simulation was conducted to evaluate the performance of proposed micromixer by solving the governing Navier–Stokes equation and convection–diffusion equation. With software (COMSOL 4.3) for computational fluid dynamics (CFD) we simulated the mixing of fluids in a micromixer with ellipse-like micropillars and basic T-type mixer in a

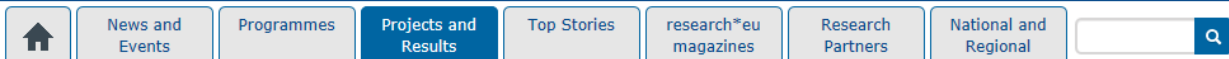




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**SELFPOCNAD Report Summary**Project reference: [262243](#)  
Funded under: [FP7-SME](#)**Final Report Summary - SELFPOCNAD (Development of a Point of Care microfluidic chip unit and self-sampling device for cervical cancer screening and platform technology for Nucleic Acid Detection at the Point of Care)** **Executive Summary:**

The aim of SelfPOCNAD project is to develop an industrial prototype for a rapid (\*same day\*) platform for cervical cancer screening using samples collected by the patient. The platform includes automated sample pre-treatment, preparation, analysis and target detection. The industrial prototype will use a limited quantity of sample material to detect the presence of several human papilloviruses simultaneously. It will make use of the same detection method that is used in PreTect HPV-Proofer; the Nucleic Acid Based Amplification (NASBA).

**Project Context and Objectives:**

The aim of the selfPOCNAD project was to develop an industrial prototype for a rapid (\*same day\*) platform for cervical cancer screening using patient collected samples. The platform will be based on Lab-On-Chip (LOC) technology, and includes automated sample pre-treatment, preparation, nucleic acid based amplification and target detection.

The industrial prototype uses up to one ml of lysed cells that has been collected from a vaginal and cervical tampon based self-collected sample. The detection instrument will operate with the same detection method proven for the well documented cervical pre-cancer screening method PreTect HPV-Proofer; amplification of E6/E7 mRNA of carcinogenic human papillomaviruses by Nucleic Acid Based Amplification (NASBA). However, the software and hardware is operating as a standalone unit able to directly operate self-collected sample detecting oncogene expression from up to 14 HPV types reporting only the E6/E7 mRNA expression that reduce the false negatives and positives to a minimum.

**Project Results:**

The development for the industrial platform for rapid "same day" cervical cancer screening has been completed during the project. The consortium decided to divide the platform into three modules; a sample container, a cartridge and an instrument. The sample container allows the patient to collect the sample in the privacy of her home. Upon arrival at the doctor's office, the sample container will be assembled with the cartridge and placed into the instrument. The complete automatic sample processing from sample pre-treatment to target detection will take place within the cartridge and the instrument. Extensive literature searches and reviews of the trends in self sampling point-of-care (POC) nucleic acids screening were carried out to ascertain state of the art related to advances in cervical pre-cancer screening, microfluidics, technical developments and commercial trends in POC, as well as the scientific work in this area. We found no products, papers or projects which presents a direct competitor to the SelfPOCNAD concept.

The development of the sample container, cartridge and instrument has been completed, taking into account a risk assessment. The prototypes of the sample container and of the cartridge have been produced. The initial testing shows promising results for sample pre-treatment, nucleic acid extraction, target amplification and detection. The extensive verification of the concept and developed technologies is in on going post project.

**Potential Impact:**

The introduction of this platform in doctors' offices (Point of Care) is expected to significantly improve compliance of women within national Cervical Cancer screening programs. This increased compliance may drastically reduce the national incidence of Invasive Cervical Cancer (ICC) and save lives.

ICC is the second most common cause of cancer in women. Each year there are more than 470 000 new cases globally; 33 000 of these in the EU. Once the disease is established, it is difficult to cure, leading to the death of 233 000 women annually - 30 000 of these in the EU-25 according to ECCA. However, if discovered in the early stages, it is preventable (and treatable). Some EU member states have a well-organized screening and prevention program, but the weak link is the use of cytology in the primary screening settings and the compliance with the program. Therefore, means of improving the compliance, especially in new member states, may save the lives of 3 - 5 000 European women each year. However, if self sampling may increase the national coverage to more than 90% within all members states including the use of technologies similar to the Self POCNAD the incidence rate of cervical cancer may be significantly reduced and save more than 25 000 European female lives every year.

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## Selfpocnad research project

microLIQUID participates in the research project SELFPOCNAD.

This project aims to develop an industrial prototype for a rapid ("same day") platform for cervical cancer screening using patient collected samples. The platform includes automated sample pre-treatment, preparation, analysis and target detection.

More information on:

- [Selfpocnad web](#)

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## Development of a Point of Care microfluidic chip unit and self-sampling device for cervical cancer screening and platform technology for Nucleic Acid Detection at the Point of Care

Acronym: SELFPOCNAD  
 Start: 10/1/2010  
 End: 9/30/2012

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**Project Status History**

progressing	10/1/2010
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**Abstract**

In SelfPOCNAD, we propose to develop an industrial prototype for a rapid ( same day ) Cervical Cancer screening of self-taken patient samples. The industrial prototype will only include enough sample from the self-taken sample in order not to risk any clogging of the sample preparation chip. The first industrial prototype will include the detection of oncogenic E6/E7 mRNA from in total 9 HPV types with an option to detect up to 19 HPV types based on detection developed for Pre-Tect HPV-Proofer laboratory kit, Nucleic Acid Sequence Based Amplification. Introduction of SelfPOCNAD at Point of Care is expected to significantly improve compliance of women with Cervical Cancer screening programs Increased compliance of women with the ICC screening programs will drastically decrease the ICC incidence and save lives. ICC is the second most common cancer in women. Each year, there are over 470,000 new cases globally. Of these, 33,000 are in the EU. Once the disease is established, it is hard to cure, so each year 233,000 women die - 15,000 in the EU. After breast cancer, it is the second-most-common cancer amongst women. However, this is a preventable and treatable disease, if detected in the early stages. Some EU member states have well-organised screening and effective prevention programmes. But better compliance with screening, especially in New Member States could save the lives of 3-5,000 European women p.a.

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## SELFPOCNAD - SelfPOCNAD - Development of a Point of Care Detection Device and Self Sampling Device for Cervical Cancer Screening –

<b>Time period:</b>	2014-01-01 - 2015-12-31
<b>Instrument:</b>	Collaborative project
<b>Call:</b>	Research for the benefit of SMEs

Our project is to develop a commercial pre-production prototype point of care test for invasive cervical cancer (ICC). This easy-to-use lab-on-a-chip system (SelfPOCNAD) will enable women to collect samples in the comfort of their own homes and take them into a GP surgery for testing and provision of immediate results. This will dramatically increase compliance of women with the ICC screening programs will and drastically decrease the ICC incidence and save lives. ICC is the second most common cancer in women. Each year, there are over 470,000 new cases globally. Of these, 33,000 are in the EU. Once the disease is established, it is hard to cure, so each year 233,000 women die - 15,000 in the EU[1]. After breast cancer, it is the second-most-common cancer amongst women. However, this is a preventable and treatable disease, if detected in the early stages. Some EU member states have well-organised screening and effective prevention programmes. But better compliance with screening using this inexpensive lab-on-a-chip system, especially in New Member States, could save the lives of 3-5,000 European women p.a. This demonstration project will enable the SelfPOCNAD consortium to prove that they have a technological and commercially sound proposition. It will allow them to secure investment by either a major blue chip company or an investment house to fund the scale up to production of this life saving and commercially attractive Point of Care (POC) test.

### Principal investigators

**Scientific co-ordinator:**

Frank Karlsen (NORCHIP AS)

**Other principal investigators:**

Morten Bech (DELTA DANSK ELEKTRONIK, LYS & AKUSTIK)

Dennis Van Den Broek (INNLAB BV)

Paul Tranter (PERA TECHNOLOGY LIMITED)

### Related Areas

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Project reference: 605889

Duration: From 2014-01-01 to 2015-12-31

Status: Accepted

Total cost: EUR 1 618 672

EU contribution: EUR 892 000

Contract type: Collaborative project (generic)

Programme acronym: FP7-SME

Subprogramme area: SME-2013-3

Our project is to develop a commercial pre-production prototype point of care test for invasive cervical cancer (ICC). This easy-to-use lab-on-a-chip system (SelfPOCNAD) will enable women to collect samples in the comfort of their own homes and take them into a GP surgery for testing and provision of immediate results. This will dramatically increase compliance of women with the ICC screening programs will and drastically decrease the ICC incidence and save lives. ...

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## selfPOCNAD

### Platform til screening for livmoderhalskræft

Projektet selfPOCNAD forsker i udvikling af en Point of Care enhed, mikrofluid chip og prøveudtagningsudstyr til screening og detektion af livmoderhalskræft for den enkelte patient.

SelfPOCNAD udvikler en industriel prototype for en hurtig (dvs. svar samme dag) platform til screening for livmoderhalskræft ved hjælp af prøver fra patienten.

Platformen omfatter automatiseret prøveforbehandling, forberedelse, analyse og detektion.

DELTA deltager som partner i projektet sammen med en række internationale interessenter.

Læs mere på [selfpocnad.com](http://selfpocnad.com) eller kontakt afdelingschef [Morten Bech](#).

### KONTAKT

Julia Skov  
Afdelingschef

+45 22 82 22 11  
[jisk@delta.dk](mailto:jisk@delta.dk)

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<b>TI Ref No:</b>	20480022
<b>Date :</b>	10 Jan 2014
<b>Description:</b>	SelfPOCNAD - Development of a Point of Care Detection Device and Self Sampling Device for Cervical Cancer Screening -, NORWAY
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## SELFPOCNAD: Development of a Point of Care microfluidic chip unit and self-sampling device for cervical cancer screening and platform technology for Nucleic Acid Detection at the Point of Care

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EU bijdrage €1.171.732

**Jaar:**

2010

**Projectnummer:**

KP72013.124

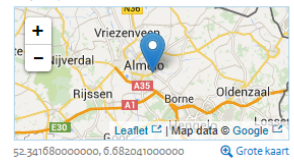
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... is usually caused by an infection such as human papilloma [virus](#) ... Although problems seldom occur after [treatment](#) for ... [Routine](#) exams and Pap tests are the best [ways](#) to ...

## Cervical screening - What your abnormal results mean

<http://www.cancerscreening.nhs.uk/cervical/publications/whatyourabnormalresultmeanspdf.pdf> - [Download](#) [Similar](#)

An abnormal result usually means that small changes have been found in the cells on the cervix (the neck of the womb). The name given to these changes is dyskaryosis.

## Sampling Device for Cervical Cancer Screening. Report for ...

[http://www.selfpocnad.com/project-results/20110420\\_D1.1.pdf/at\\_download/file](http://www.selfpocnad.com/project-results/20110420_D1.1.pdf/at_download/file) - [Download](#)

One member of this consortium (NorChip) sells an mRNA-based diagnostic system, the ... AND HPV VACCINATION The introduction of two new [vaccines](#) (Sanofi Pasteur MSD's ...

## Results of cervical screening

[http://www.jostrust.org.uk/about-cervical-cancer/cervical-screening-smear-test-and-abnormal-cells/abnormal-cervical-screening-results/Understanding\\_positive\\_screening\\_results\\_and\\_abnormal\\_cells.pdf](http://www.jostrust.org.uk/about-cervical-cancer/cervical-screening-smear-test-and-abnormal-cells/abnormal-cervical-screening-results/Understanding_positive_screening_results_and_abnormal_cells.pdf) - [Download](#) [Similar](#)

Understanding positive screening results and abnormal cells Results of cervical screening Technical term Description Treatment Negative Normal This means that there ...

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***selfPocnad presented at MicroTAS conference in Freiburg, Germany, October 2013***

The selfPOCNAD technology was presented at the main part of the exhibition of the 17th International Conference MicroTAS on 27 to 31<sup>st</sup> October 2013. It was done under the Norwegian Center of Expertise, Micro and Nanotechnology.



***selfPOCNAD presented at the NABA (Norwegian African Business Association) Nordic business summit***

selfPOCNAD project was presented at the NABA (Norwegian African Business Association) Nordic business summit in OSLO, Norway November 2015 and contacts were established with the main embassies and representatives from Kenya, Uganda, Rwanda, Ghana and DR Congo. They showed great interest for the selfPOCNAD technology with several local distributors, hospitals and business women indicating their desire to start screening 10 000 women every year using this technology.



## ***SelfPOCNAD high Volume production Line based on METIS platform demonstrated at Motek trade fair***

This METIS platform, used to demonstrate proposed SelfPOCNAD high-volume production line. at the 34<sup>th</sup> Motek trade fair in Germany from 5th through the 8th of October, 2015 October 2015 with over 38,568 Expert Visitors. The international trade fair Motek is the world's leading event in the fields of production and assembly automation, feed technology and material flow, streamlining through handling technology, and industrial handling. As such, Motek is the only trade fair to clearly focus on all aspects of mechanical engineering and automation and on the presentation of entire process chains  
38,568 Expert Visitors



A blog article was posted on the company website to further promote the new development that is well suited to the production of SelfPOCNAD and other medical devices.

The METIS concept will also be useful when the SelfPOCNAD production is also expanded to other types of detection. Swapping modules where necessary, but keeping the rest of the production line intact greatly reduces the initial investment required to start the full automation of SelfPOCNAD production.

