COI-NEXT川崎拠点 CHANGE Center of Healthy longevity And Nursing innovation with Global Ecosystem

第4回シンポジウム

みんなで作る未来のケア

看護と工学が出会うとき

COI-NEXT Kawasaki (CHANGE) 4th Annual Symposium

CREATING THE FUTURE OF CARE TOGETHER
-When Nursing and Engineering Meet-

2026年3月5日(木)
13:30~17:10

Thursday, March 5th, 2026
from 1:30 PM to 5:10 PM

要旨集
Proceedings

会場参加、オンライン参加いずれも事前登録が必要です。
下記URLもしくはQRコードより事前登録をお願いいたします。
https://iconm.kawasaki-net.ne.jp/form/changesympo2025/

CHANGE
Center of Healthy longevity And Nursing innovation with Global Ecosystem

プログラム

開会挨拶

一木　隆範　　プロジェクトリーダー / iCONM研究統括 / 東京大学大学院工学系研究科 教授
福田　紀彦　　川崎市長

来賓挨拶

長我部信行　　JST 共創の場形成支援プログラム 共創分野・地域共創分野/第 2 領域プログラムオフィサー
玉井　利明　　文部科学省 科学技術・学術政策局 産業連携・地域振興課/拠点形成・地域振興室 室長補佐

第1部　工学と看護のチカラで変わる未来のケア：ナーシングエンジニアリング最前線

基調講演
Smart Wearable Devices for Nursing and Healthcare Applications
Sei Kwang Hahn　　Professor of Department of Materials Science and Engineering,
POHANG UNIVERSITY OF SCIENCE AND TECHNOLOGY (POSTECH)

拠点での取組み
「ナーシングエンジニアリング」に期待する看護師の意識への触発
堀田　彰恵　　川崎市看護協会 会長

拠点での取組み
見守る、つながる、支える～ナーシングエンジニアリングの挑戦～
松元　亮　　研究開発課題1リーダー / 東京科学大学 総合研究院 生体材料工学研究所 教授

休憩/ティーブレイク

第2部　高校生が描くケアの未来：わたしたちが望む”しあわせな社会”とは？

FOB (Future Opinion Board) セッション

FOB	阿部　直人	川崎市立川崎高校 福祉科3年
	岩﨑　満心美	川崎市立川崎高校 福祉科3年
	井上　亜夢	川崎市立川崎総合科学高校 科学科2年
	野地　虹太郎	川崎市立川崎総合科学高校 科学科2年
モデレーター	神田　循大	研究開発課題3サブリーダー / iCONM特任研究員

第3部　語り合おう、未来のケア：専門家・市民・若者が描く”支え合う社会”

パネルディスカッション

パネリスト	Sei Kwang Hahn	Professor of Department of Materials Science and Engineering, POSTECH
パネリスト	仲上　豪二朗	東京大学大学院医学系研究科 健康科学・看護学専攻 教授 / 看護理工学会 理事
パネリスト	白﨑　功	CHANGE シニアコーディネーター / 株式会社リリアム大塚 会長
パネリスト	秋池　小夜子	東京大学大学院 新領域創成科学研究科 修士課程1年 / 学生サークルMeDCraft メンバー
パネリスト	大石　和葉	洗足学園高校 2年
	松原　光希	洗足学園高校 2年
モデレーター	島﨑　眞	副プロジェクトリーダー / iCONMコミュニケーションマネージャー

閉会挨拶

片岡　一則　　川崎市産業振興財団 副理事長 / iCONMセンター長

Program

Opening Speech

Takanori Ichiki — Project Leader / Research Director, iCONM / Professor, Graduate School of Engineering, The University of Tokyo
Norihiko Fukuda — Mayor of Kawasaki City

Guest Speech

Nobuyuki Osakabe — Program Officer, JST COI-NEXT (Group 2)
Toshiaki Tamai — Deputy Director, University-Industry Collaboration and Regional R&D Division, Science and Technology Policy Bureau, MEXT

Part 1 Lectures

Transforming Future Care Through Engineering and Nursing: The Cutting Edge of Nursing Engineering

Keynote Lecture
Smart Wearable Devices for Nursing and Healthcare Applications
Sei Kwang Hahn — Professor of Department of Materials Science and Engineering, POHANG UNIVERSITY OF SCIENCE AND TECHNOLOGY (POSTECH)

Lecture1: Initiatives at COI-NEXT Kawasaki
Inspiration for Nurses' Awareness Regarding Expectations for 'Nursing Engineering'
Akie Hotta — Chairperson, Kawasaki Nursing Association

Lecture2: Initiatives at COI-NEXT Kawasaki
Watching Over, Connecting, Supporting ~The Challenge of Nursing Engineering~
Akira Matsumoto — Theme 1 Leader / Professor, Institute of Science Tokyo

Tea Break

Part 2 FOB Session

The Future of Care as Envisioned by High School Students: What Kind of "Happy Society" Do We Want?

FOB Speakers	Naoto Abe	Third Year Students of Municipal Kawasaki High School (Welfare Class)
	Manami Iwasaki	Third Year Students of Municipal Kawasaki High School (Welfare Class)
	Amu Inoue	Second Year Students of Kawasaki City High School for Science & Technology (Science Class)
	Kotaro Noji	Second Year Students of Kawasaki City High School for Science & Technology (Science Class)
Moderator	Yukihiro Kanda	Theme 3 Sub-Leader／Project Scientist, iCONM

Part 3 Panel Discussion

Let's Talk About Future Care: Experts, Citizens, and Youth Envisioning a "Mutually Supportive Society"

Panelist	Sei Kwang Hahn	Professor of Department of Materials Science and Engineering, POSTECH
Panelist	Goujiro Nakagami	Professor, Department of Health Sciences and Nursing, Graduate School of Medicine, The University of Tokyo / Director, The Society for Nursing Science and Engineering
Panelist	Isao Shirasaki	Senior Cordinator / Chairperson, Lilium Otsuka, Co., Ltd.
Panelist	Sayoko Akiike	1st year of the MS course, Graduate School of Frontier Science, The University of Tokyo Member of Student Circle "MeDCraft"
Panelist	Kazuha Ohishi	Second Year Students of Senzoku Gakuen High School
	Mitsuki Matsubara	Second Year Students of Senzoku Gakuen High School
Moderator	Makoto Shimazaki	Project Sub-Leader / Communications Manager, iCONM

Closing Speech

Kazunori Kataoka — Deputy Chairperson, Kawasaki Institute of Industrial Promotion / Center Director, iCONM

CHANGE
Center of Healthy longevity And Nursing innovation with Global Ecosystem

ごあいさつ

本日は、第4回CHANGEシンポジウムにご来場いただき、誠にありがとうございます。本拠点は2022年の発足以来、看護・医療・工学が連携する新たな共創モデルの確立に取り組み、第1フェーズの4年間で、ナーシングエンジニアリングという概念の基盤整備、現場シャドーイングを通じたニーズ構造化、そして「共感と実証の場」の形成を進めてまいりました。川崎市を中心に、多様な看護実践者・企業・研究者が対話を重ね、看護の現実に寄り添う技術開発や、ケアを軸とした地域共創の芽が着実に育ちつつあります。

日本はこれから、これまでにない速度で少子高齢化が進みます。医療・看護の需要は増大し、従来の延長線では地域のケア体制を維持することは困難です。そのような時代において不可欠なのは、現場の声を起点として課題を“見える化”し、工学的アプローチと看護専門性を結びつけ、持続可能なケアの仕組みを社会実装していくことです。第1フェーズで生まれた「かわさきケアデザインコンソーシアム」は、そのための地域基盤として重要な役割を担い始めています。

本日お集まりいただいた皆様とともに、第2フェーズでは、これまで培った共創基盤をさらに発展させ、革新的な技術を現場へ確実に届け、そして社会の制度・文化・市民意識といった“環境”へ働きかける取り組みを強化してまいります。目指すのは、誰もが住み慣れた地域で、自分らしく生き、必要なケアを過不足なく受けられる「レジリエント健康長寿社会」の実現です。

本日のシンポジウムが、医工看の枠を越え、市民・若者・行政・企業がともに未来のケアを構想する対話の場となることを心より願っております。今後とも、皆様のご支援とご協力を賜りますようお願い申し上げます。

CHANGEプロジェクトリーダー / iCONM 研究統括
東京大学大学院工学系研究科 教授

Greeting

Thank you very much for attending the 4th CHANGE Symposium today. Since its establishment in 2022, this hub has been working to establish a new co-creation model integrating nursing, healthcare, and engineering. Over the four years of Phase 1, we have advanced the foundational development of the concept of nursing engineering, structured needs through field shadowing, and formed a "space for empathy and validation." Centered in Kawasaki City, diverse nursing practitioners, companies, and researchers have engaged in repeated dialogue. This has steadily nurtured the seeds of technology development closely aligned with nursing realities and community co-creation centered on care.

Japan will now experience unprecedented acceleration in its aging and declining birthrate. Demand for medical and nursing care will surge, making it difficult to sustain regional care systems through conventional approaches alone. In such times, it is essential to visualize challenges starting from frontline voices, integrate engineering approaches with nursing expertise, and implement sustainable care systems within society. The "Kawasaki Care Design Consortium," born in Phase 1, is beginning to play a vital role as the regional foundation for this endeavor.

In Phase 2, together with all of you gathered here today, we will further develop the co-creation foundation cultivated thus far. We will strengthen efforts to reliably deliver innovative technologies to the field and to influence the broader "environment" encompassing societal systems, culture, and public awareness. Our goal is to realize a "Resilient Healthy Longevity Society" where everyone can live authentically in their familiar communities, receiving precisely the care they need.

I sincerely hope today's symposium becomes a forum for dialogue where citizens, young people, government, and businesses—transcending the boundaries of medicine, engineering, and nursing—can jointly envision the future of care. I ask for your continued support and cooperation moving forward.

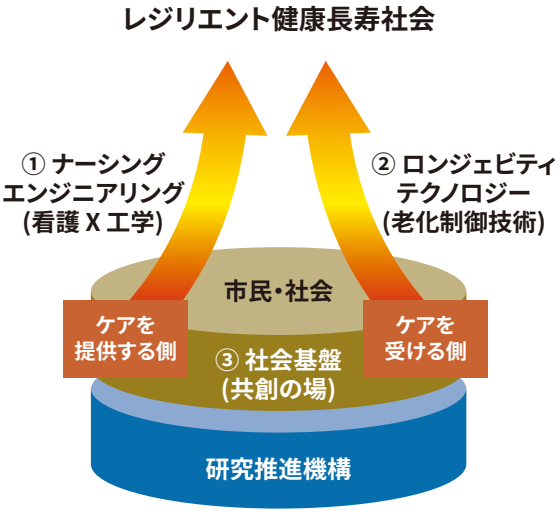
Takanori Ichiki, Ph.D.
Project Leader of CHANGE / Research Director of iCONM
Professor, Graduate School of Engineering, The University of Tokyo

CHANGE
Center of Healthy longevity And Nursing innovation with Global Ecosystem

第1部　工学と看護のチカラで変わる未来のケア：ナーシングエンジニアリング最前線

プロジェクトCHANGEのビジョンである「レジリエント健康長寿社会の実現」のためには、ケアを提供する側のイノベーションとして、ケア従事者が患者さんあるいは療養者に寄り添えるケア環境を構築することが求められます。手と目で護ると書いて「看護」。治療後にどれだけ看護師が患者さんと接することができるかで患者さんの予後が変わることは、ナイチンゲールも示すところです。工学との連携により看護の間接業務を効率化し、看護師が患者・療養者に寄り添う時間を確保するための「ナーシングエンジニアリング」を本拠点の研究開発テーマのひとつとしています。

第1部では、韓国・浦項工科大学（POSTECH）からSei Kwang Hahn教授をお招きし、研究途上にある看護領域でのウェアラブルデバイスについて基調講演いただきます。また、本拠点から、川崎市看護協会の堀田彰恵会長と、ナーシングエンジニアリング領域を担う研究開発課題1のリーダーの松元亮・東京科学大学教授が登壇します。



プロジェクトCHANGE 体制図

基調講演

Smart Wearable Devices for Nursing and Healthcare Applications
Dr. Sei Kwang Hahn
Professor of Materials Science and Engineering, Pohang University of Science and Technology (POSTECH)

拠点での取組み①

「ナーシングエンジニアリング」に期待する看護師の意識への触発
堀田　彰恵　川崎市看護協会 会長

拠点での取組み②

見守る、つながる、支える～ナーシングエンジニアリングの挑戦～
松元　亮　　東京科学大学総合研究院 生体材料工学研究所 教授

Part 1: The Future of Care Transformed by Engineering and Nursing: The Cutting Edge of Nursing Engineering

To realize Project CHANGE's vision of a resilient, healthy, and long-lived society, innovation on the care provider side is essential. This involves creating a care environment where caregivers can be close to patients or those receiving medical care. The word “nursing” is written with characters meaning “to protect with hands and eyes.” As Florence Nightingale demonstrated, the extent to which nurses can interact with patients after treatment significantly impacts patient prognosis. One of our core research and development themes is “Nursing Engineering.” This involves collaborating with engineering to streamline indirect nursing tasks, freeing up nurses' time to be with patients and those in care.

In Part 1, we welcome Professor Sei Kwang Hahn from Pohang University of Science and Technology (POSTECH), South Korea, who will deliver a keynote lecture on wearable devices in nursing, a field currently under research. Also taking the stage from our center will be Ms. Akie Hotta, Chairperson of the Kawasaki Nursing Association, and Professor Akira Matsumoto, Institute of Science Tokyo, the leader of Research and Development Project 1, which focuses on the field of nursing engineering.

Keynote Lecture

Smart Wearable Devices for Nursing and Healthcare Applications

Dr. Sei Kwang Hahn, Professor of Materials Science and Engineering, Pohang University of Science and Technology (POSTECH)

Research Topic ①

Inspiration for Nurses' Awareness Regarding Expectations for Nursing Engineering

Ms. Akie Hotta, Chairperson of Kawasaki Nursing Association

Research Topic ②

Watching Over, Connecting, Supporting—The Challenge of Nursing Engineering—

Dr. Akira Matsumoto, Professor of Department of Organic Biomaterials, Institute of Science Tokyo

Keynote Lecture
Smart Wearable Devices for Nursing and Healthcare Application

Keynote Speaker

Dr. Sei Kwang Hahn,
Endowed Chair Professor of Material Science and Engineering, Pohang University of Science and Technology Korea (POSTECH)
E-MAIL: skhanb@postech.ac.kr

Biography

He obtained his B.S. (1991), M.S. (1993) and Ph.D. (1996) in the Department of Chemical and Biomolecular Engineering at KAIST. After working at LG Chemical for 5 years, he did his post-doctoral research with Prof. Allan Hoffman in the Department of Bioengineering at the University of Washington for 2001-2002. Then, he worked at the Hoffman-La Roche group, Chugai Pharmaceutical Co. in Japan for 2002-2005. He has become a professor at POSTECH in 2005. He was a visiting professor at Harvard Medical School for 2012-2013 and at Stanford University for 2019-2020. He has become the National Academy of Engineering of Korea in 2020, the Fellow of Biomaterials Science and Engineering for IUSBSE in 2024, the Vice President for the Polymer Society of Korea in 2024 and for the Korean Society of Biomaterials in 2025, and the Fellow of Korean Academy of Science and Technology (KAST) in 2025. He has worked as the Editor-in-Chief of Biomaterials Research, Associate Editor of Biomaterials and Heliyon, and the Guest Editor of Advanced Materials and several SCI journals.

Research Focus

His research is focusing on biomaterials for diagnostic, therapeutic, theranostic, and smart healthcare applications.

Abstract

Diagnostic and therapeutic devices have been routinely used in the clinic placed at patients' bedsides. However, with the recent progress of nanobiotechnology, various healthcare devices have been investigated for theranostic applications with greatly improved patients' compliance. Here, we developed smart contact lenses and smart wearable devices for both continuous diabetic monitoring and diabetic retinopathy therapy. Smart contact lens could measure tear glucose levels as a non-invasive alternative to the conventional blood glucose tests and deliver drugs from gold coated reservoirs for the treatment of diabetic retinopathy. We also developed a smart NIR light emitting contact lens for the diabetic diagnosis and the treatment of diabetic retinopathy. The retinal vascular hyper-permeability induced by diabetic retinopathy in rabbits was reduced to the statistically significant level by simply wearing the NIR light emitting contact lens. In addition, we developed a smart contact lens to monitor and control the intraocular pressure (IOP) for the treatment of glaucoma. The IOP could be maintained in a controlled manner by the released drug in response to the measured IOP. On the basis of these results, we developed a smart wearable device for highly sensitive glucose monitoring in sweat for clinically feasible diabetic diagnosis. A blue-tooth system could send data wirelessly allowing patients to check their diabetic diagnosis results on the mobile phones. Furthermore, we developed cell-integrated poly(ethylene glycol) hydrogels for in vivo optogenetic sensing and therapy. Using optogenetic cells producing glucagon-like peptide-1, we performed light-controlled therapy and obtained improved glucose homeostasis in diabetic model mice. This presentation will provide the current state-of-the-art smart wearable materials and devices for nursing and healthcare applications.

拠点での取組み①
「ナーシングエンジニアリング」に期待する看護師の意識への触発

堀田　彰恵　　公益社団法人川崎市看護協会 会長
hotta@kawa-kango.jp

演者紹介

静岡県掛川市出身、愛知県で看護師免許及び助産師免許を取得し名古屋市立の病院にて助産師として勤務。その後、神奈川県で保健師免許を取得し昭和61年に川崎市に入庁。35年間、行政保健師として地域での市民への相談支援や住民活動支援を行った。本庁部門では母子保健等の子育て支援分野で、事業の創設や拡充等に携わった。退職時、こども未来局担当理事(児童家庭支援・虐待対策室長)。　令和3年6月から現職。市内看護職と市民に身近な市レベルの看護協会として、「看護の力で地域を元気に」をモットーに、看護・医療・福祉等の関係団体や行政と連携して地域に根差した取組を進めている。

講演要旨

川崎市看護協会は、看護現場の声を研究者に届ける役割を担い、業務改善に役立つ技術や道具のアイデアを集める「看護のあったらいいな」調査の実施、看護職と研究者の意見交換の場や研究者にケアの現場に立っていただく機会の設定等を行っている。そのような場面で、看護職から「関心を持ってもらえることが嬉しい」という声をよく聞く。看護職は直向きに目の前の人々へケアを提供しているが、労働環境、看護の質の向上に関わる課題を抱える大変な業務の実情を人々に知ってほしいと思っている。
少子超高齢化が進む中で誰もがその人らしく暮らせる社会の実現を目指す時、「看護」は非常に重要な機能だ。これからの看護やケアのあり方を社会のみんなで考えて変えていかなければならない。令和7年11月に川崎市が開催した地ケアフェアにブース出展した際、来場した市民に、CHANGEの研究者に届けたい願いを聞いたところ80件の声が寄せられ、最も多かったのは薬剤に関する期待、次いで、寝たきりでも自立できる装置、特に排泄に関する装置の開発への期待だった。

看護学の世界でも従前から工学とコラボした研究開発が行われてきた。療養者と家族の声に寄り添う看護職への共感から、医工看共創によるケアイノベーションが起こっていく。看護職が現場の課題を異分野に発信し、力を合わせて解決に向けて進んでいく。「ナーシングエンジニアリング」が、共創のさらなる一歩を踏み出すフィールドになることを願っている。看護職自身も「その人らしく暮らせる社会」の一員として、生き生きと働き続け輝いて行けるように。

Research Topic ①
Inspiration for Nurses' Awareness Regarding Expectations for Nursing Engineering

Ms. Akie Hotta, Chairperson of Kawasaki Nursing Association

Biography

Born in Kakegawa City, Shizuoka Prefecture. Obtained nursing and midwifery licenses in Aichi Prefecture and worked as a midwife at a Nagoya City hospital. Subsequently obtained a public health nurse license in Kanagawa Prefecture and joined Kawasaki City government in 1986. Served for 35 years as an administrative public health nurse, providing consultation support to citizens and supporting community activities. Within the main city government department, was involved in establishing and expanding programs in the child-rearing support field, including maternal and child health. Upon retirement, served as the Director in charge of the Children and Future Bureau (Head of the Child and Family Support/Abuse Prevention Office). Assumed current position in June 2021. As a city-level nursing association close to both nurses and citizens within the city, she promotes community-rooted initiatives under the motto “Revitalizing the Community Through the Power of Nursing,” collaborating with related organizations in nursing, healthcare, welfare, and the administration.

Abstract

The Kawasaki Nursing Association serves as a bridge between nursing practice and researchers, conducting the “Nursing Wish List” survey to gather ideas for technologies and tools that could improve work practices. It also facilitates exchanges between nursing professionals and researchers, and arranges opportunities for researchers to experience the frontlines of care. In these settings, we often hear nursing professionals express how gratifying it is to have their work recognized. Nursing professionals diligently provide care to the people before them, yet they wish for others to understand the reality of their demanding work, which involves challenges related to the labor environment and improving the quality of nursing care.

As Japan faces declining birthrates and an increasingly aged society, nursing plays a critically important role in realizing a society where everyone can live as themselves. We must all think together about the future of nursing and care and work to change it. In November 2025, we exhibited at the Kawasaki City Care Fair to ask citizens visiting the booth what wishes they wanted to convey to CHANGE researchers. We received 80 responses. The most common expectation was related to medications, followed by hopes for devices enabling independence even for bedridden individuals, particularly devices addressing excretion needs.

Within nursing science, collaborative research and development with engineering has been ongoing for some time. Empathy for nursing professionals who listen closely to patients and their families sparks care innovation through medical-engineering-nursing co-creation. Nurses communicate frontline challenges to other fields, and together they advance solutions. We hope “Nursing Engineering” becomes the field where co-creation takes its next step forward. May nursing professionals themselves, as members of a society where everyone can live authentically, continue to work vibrantly and shine.

拠点での取組み②
見守る、つながる、支える～ナーシングエンジニアリングの挑戦～

松元　亮　　東京科学大学総合研究院 生体材料工学 教授
matsumoto.bsr@tmd.ac.jp

演者紹介

広島県出身。専門は高分子材料学。2004年に東京大学大学院工学系研究科材料学専攻にて博士（工学）を取得後、米国Tufts　Universityの博士研究員、東京大学バイオエンジニアリング専攻の特任助教、東京医科歯科大学生体材料工学研究所の助教・准教授・教授を経て、現在は東京科学大学生体材料工学研究所の教授を務める。研究テーマは、高分子科学を基盤としたバイオエンジニアリングであり、これまでに絹抽出タンパク質の溶液物性・自己会合性の解明とナノバイオ材料への応用、環境応答型ドラッグデリバリーシステム、バイオエレクトロニクス融合デバイス、新規信号変換原理によるバイオセンサなど、多岐にわたる研究を推進してきた。現在はボロン酸化学をプラットフォームとし、機能性ゲルから医療デバイス設計までを包含する研究を展開しており、とりわけボロン酸ゲルを利用した「貼るだけ人工膵臓」デバイス創製に関する複数の大型プロジェクトを主導している。2017年からは神奈川県立産業技術総合研究所のプロジェクトリーダー、2022年より東京大学大学院工学系研究科マテリアル工学専攻の客員教授を兼任。学会活動として、高分子学会ゲル研究会委員長、日本歯科理工学会理事を務めるほか、2021年からはB-MED株式会社の代表取締役社長として医療デバイスの社会実装にも取り組んでいる。主な受賞に、中谷賞（2012年）、東京医科歯科大学優秀研究賞（2013年）、バイオインダストリー奨励賞（2018年）、高分子学会旭化成賞（2020年）などがある。

講演要旨

少子高齢化の進行と医療体制の変化により、看護現場では業務負担の増大とケアの質の両立が困難となっている。ナーシングエンジニアリングは、看護そのものを工学的に支援する新しい学際領域として、患者を「見守り」、看護師と「つながり」、地域を「支える」ための技術革新をめざすものである。本講演では、室内・体内モニタリングを統合するケミカルアセスメント技術、光学マイクロニードルによる分子計測、小型健康診断デバイス、多剤投与管理システムなど、看護の質と効率を同時に高める取り組みを概説する。さらに、訪問看護のニーズから生まれた「顔の見えるナースコール」は、動画による“症状の見える化”と心理的安心感を生み出す新たな遠隔看護基盤として開発を進めており、実証研究では看護判断の高度化や高齢者への有効性が既に明らかになりつつある。今後はAI補助や各種センサとの連携により地域包括ケアへの展開が期待される。これらを通じ、看護現場を支える次世代のナーシングエンジニアリングの挑戦について紹介する。

Research Topic ②
Watching Over, Connecting, Supporting ～Challenge of Nursing Engineering～

Prof. Dr. Akira Matsumoto, Laboratory for Biomaterials and Bioengineering, Institute of Science Tokyo

Biography

Born in Hiroshima Prefecture. Specializes in polymer materials science. After earning a Ph.D. in Engineering from the Graduate School of Engineering, University of Tokyo, in 2004, he served as a postdoctoral researcher at Tufts University in the United States, a specially appointed assistant professor in the Department of Bioengineering at the University of Tokyo, and an assistant professor, associate professor, and professor at the Institute of Biomaterials and Bioengineering, Tokyo Medical and Dental University. He is currently a professor at the Institute of Biomaterials and Bioengineering, Institute of Science Tokyo. His research focuses on bioengineering based on polymer science. He has advanced diverse research areas, including elucidating the solution properties and self-assembly behavior of silk extract proteins and their application to nano-biomaterials; developing environmentally responsive drug delivery systems; creating bioelectronics hybrid devices; and designing biosensors based on novel signal conversion principles. Currently, using boronic acid chemistry as a platform, he conducts research encompassing functional gels to medical device design. Notably, he leads multiple large-scale projects focused on creating a “patchable artificial pancreas” device utilizing boronic acid gels. Since 2017, he has concurrently served as Project Leader at the Kanagawa Prefectural Institute of Industrial Science and Technology and, since 2022, as Visiting Professor at the Department of Materials Engineering, Graduate School of Engineering, The University of Tokyo. His academic society activities include serving as Chair of the Gel Research Group of the Society of Polymer Science, Japan, and as Director of the Japan Society for Dental Materials and Technology. Additionally, since 2021, he has been engaged in the societal implementation of medical devices as President and CEO of B-MED Inc. Major awards include the Nakatani Prize (2012), Tokyo Medical and Dental University Outstanding Research Award (2013), Bioindustry Encouragement Award (2018), and the Asahi Kasei Award from the Society of Polymer Science, Japan (2020).

Abstract

The progression of Japan's aging and declining birthrate, coupled with changes in the healthcare system, has made it increasingly difficult for nursing staff to balance growing workloads with maintaining care quality. Nursing Engineering, as a new interdisciplinary field that provides engineering support for nursing itself, aims for technological innovation to “monitor” patients, ‘connect’ with nurses, and “support” communities. This presentation will outline initiatives that simultaneously enhance nursing quality and efficiency, including chemical assessment technology integrating indoor and in-body monitoring, molecular measurement using optical microneedles, compact health screening devices, and multi-drug administration management systems. Furthermore, the “Smart Tele-Nursing System,” born from home visit nursing needs, is being developed as a new remote nursing platform that enables “visualization of symptoms” through video and provides psychological reassurance. Pilot studies have already demonstrated its potential for enhancing nursing assessment and effectiveness for the elderly. Future integration with AI assistance and various sensors is expected to facilitate its deployment in community-based integrated care. Through these examples, we introduce the challenges of next-generation nursing engineering supporting the nursing field.

In this lecture, I would like to introduce domestic and international efforts for mRNA vaccine and drug development and the technologies used therein, and discuss the possibilities and future vision of drug discovery. At this point in time (September 2024), there are still no approved cases of vaccines or therapeutic drugs other than those related to coronaviruses, and there are not many cases of development other than vaccines for infectious diseases, but many noteworthy cases have emerged and issues have also been highlighted. We hope that these discussions will help to revitalize mRNA drug discovery in the future.

FOB (Future Opinion Board) セッション
第2部　高校生が描くケアの未来：わたしたちが望む”しあわせな社会”とは?

「レジリエント健康長寿社会」の実現には、将来の当事者である若者の視点が欠かせません。プロジェクトCHANGEでは若者との対話を重視しており、昨年11月26日には川崎市立高校2校による合同ワークショップを開催しました。カリキュラムに介護実習を取り入れている川崎高校福祉科、理工系人材を育成する川崎総合科学高校科学科という異なる専門性を持つ生徒たちが、ケア現場の課題や解決策について議論しました。各班のファシリテーターは、大学の研究者のほか、CHANGEの企業経験者や保健師、川崎市職員が担い、高校生から次々と湧き出す意見を整理しまとめあげました。各々の発表内容は右のQRコードでリンクする「サイエンス学びラボ」に記されています。

本セッションでは、両校代表にワークショップを振り返ってもらいながら、目指すべき未来や理想の社会について、若者目線で語っていただきます。

登壇者

川崎市立川崎高校福祉科（川崎市川崎区）3年
阿部　直人　さん
岩﨑　満心美　さん

川崎市立川崎総合科学高校科学科（川崎市幸区）2年
井上　亜夢　さん
野地　虹太郎　さん

モデレーター紹介

神田　循大, 博士（工学）
CHANGE 研究開発課題3　サブリーダー / iCONM 特任研究員（一木ラボ）
2023年に東京大学大学院工学研究科で博士号を取得後、現職。工学研究者が看護現場に入り、工学が介入できる場面を探る「シャドーイング」を実践し、現場ニーズに基づいたケアイノベーションを目指した研究を進めている。

FOB (Future Opinion Board) Session
Part 2 The Future of Care as Envisioned by High School Students: What Kind of "Happy Society" Do We Want?

Realizing a resilient, healthy, and long-lived society requires the perspective of young people, who will be the future stakeholders. Project CHANGE prioritizes dialogue with youth, and on November 26 last year, we held a joint workshop with two Kawasaki municipal high schools. Students from Municipal Kawasaki High School's Welfare Department, which incorporates caregiving internships into its curriculum, and Kawasaki City High School for Science and Technologies' Science Department, which cultivates science and engineering talent, discussed challenges and solutions in care settings. Facilitators for each group—comprising university researchers, CHANGE corporate alumni, public health nurses, and Kawasaki City employees—systematically organized and synthesized the continuous stream of ideas emerging from the high school students.

In this session, representatives from both schools will reflect on the workshop and share their perspectives on the future we should aim for and an ideal society, speaking from a youth viewpoint.

FOB (Future Opinion Board) Speakers:

Welfare Class of Municipal Kawasaki High School (3rd year):
Mr. Naoto Abe
Ms. Manami Iwasaki

Science Class of Kawasaki City High School for Science & Technology (2nd year):
Ms. Amu Inoue
Mr. Kotaro Noji

Moderator:

Dr. Yukihiro Kanda
CHANGE R&D Theme 3 Sub-Leader / Project Scientist, iCONM (Ichiki Lab)
After earning a Ph.D. from the Graduate School of Engineering at the University of Tokyo in 2023, he assumed his current position. He practices "shadowing," where engineering researchers enter nursing settings to identify areas where engineering can intervene, advancing research aimed at care innovation based on field needs.

パネルディスカッション
第3部：語り合おう、未来のケア: 専門家・市民・若者が描く”支え合う社会”

基調講演を行う Prof. Hahn（工学研究者）に加え、看護研究者、企業経営者、さらには大学生、高校生がパネリストとして登壇し、本シンポジウムのテーマでもあるナーシングエンジニアリングと未来のケアについてパネルディスカッションを行います。話題提供者として、東京大学大学院医学系研究科　健康科学・看護学専攻の教授で、看護理工学会の理事を務める仲上豪二朗先生が「看護理工学の現状と展望」について、また現役の企業会長で CHANGEシニアコーディネーターを務める白﨑 功氏が「未来のケアシステムの創造」についてショートプレゼンテーションを行い、高校生・大学生を含むパネリストたちとの間で、これらの話題に関するディスカッションを展開します。

パネリスト

Prof. Sei Kwang Hahn（工学研究者）
基調講演者。略歴は、p.8 参照

仲上　豪二朗　氏, 博士（保健学）
東京大学大学院医学系研究科 健康科学・看護学専攻 教授 / 看護理工学会 理事
話題提供①「看護理工学の現状と展望」

白﨑　功　氏（企業経営者）
CHANGEシニアコーディネーター /（株）リリアム大塚会長
話題提供②「未来のケアシステムの創造」

秋池　小夜子　さん
東京大学大学院 新領域創成科学研究科 修士課程1年 / 学生サークルMeDCraft* メンバー
*: 医療現場のニーズに基づき、医療系デバイスやアプリの開発を行う東京大学を中心とした学生サークル

大石　和葉　さん
洗足学園高校2年

松原　光希　さん
洗足学園高校2年

モデレーター

島﨑　眞, 博士（薬学）
CHANGE 副プロジェクトリーダー / iCONM コミュニケーションマネジャー

Panel Discussion
Part 3 Let's Discuss Future Care:
A “Mutually Supportive Society” Envisioned by Experts, Citizens, and Youth

In addition to keynote speaker Prof. Hahn (engineering researcher), nursing researchers, corporate executives, and even university and high school students will take the stage as panelists to discuss nursing engineering and future care—the theme of this symposium—in a panel discussion. As topic presenters, Prof. Gojiro Nakagami from the Graduate School of Medicine, The University of Tokyo, Department of Health Sciences and Nursing, who also serves as Director of the Society for Nursing Science and Engineering, will give a short presentation on “The Current State and Future Prospects of Nursing Science and Engineering,” while Isao Shirasaki, a current corporate chairman and CHANGE Senior Coordinator, will present on “Creating Future Care Systems”. Discussions on these topics will then unfold with panelists including high school and university students.

Panelists:

Prof. Sei Kwang Hahn (Engineering Researcher)
Keynote Speaker. See p.8 for his biography.

Prof. Gojiro Nakagami (Nursing Researcher)
Professor, Department of Health Sciences and Nursing, Graduate School of Medicine, The University of Tokyo / Director, Society for Nursing Science and Engineering
Discussion Topic①: “Current Status and Future Prospects of Nursing and Health Sciences”

Mr. Isao Shirasaki (Business Executive)
CHANGE Senior Coordinator / Chairman, Liliam Otsuka Co., Ltd.
Discussion Topic②: “Creating Future Care Systems”

Ms. Sayoko Akiike
1st year of the MS course, Graduate School of Frontier Science, The University of Tokyo
Member of Student Circle MeDCraft*
*: A student circle centered at The University of Tokyo that develops medical devices and applications based on needs identified in clinical settings.

Ms. Kazuha Oishi
Second-year student, Senzoku Gakuen High School

Ms. Mitsuki Matsubara
Second-year student, Senzoku Gakuen High School

Moderator:

Dr. Makoto Shimazaki
Project Sub-Leader / Communications Manager, iCONM

MEMO

《主催》

《後援》

Proceedings of COI-NEXT Kawasaki (CHANGE) 4th Annual Symposium

Organizer: Kawasaki Institute of Industrial Promotion

Issued: March 5th, 2026

CHANGE Research Administration Office

https://change.kawasaki-net.ne.jp/