Master of Engineering Program in Automotive and Advanced Transportation Engineering

May 10, 2022

Assoc.Prof.Dr.Preechar KARIN,
(A2TE Program Director, TAIST Tokyo Tech)

Chi-na Ruangdaj

Omjai Jantira Sutisa Natcha Jitlada

Chinda Preechar Vitoon Sontipee

Hanamura Kosaka Inaba

The first program established in 2007

Master of **Eng**ineering Program in **A**utomotive and Advanced Transportation **E**ngineering

Course

TAIST
TokyoTech

What you will learn

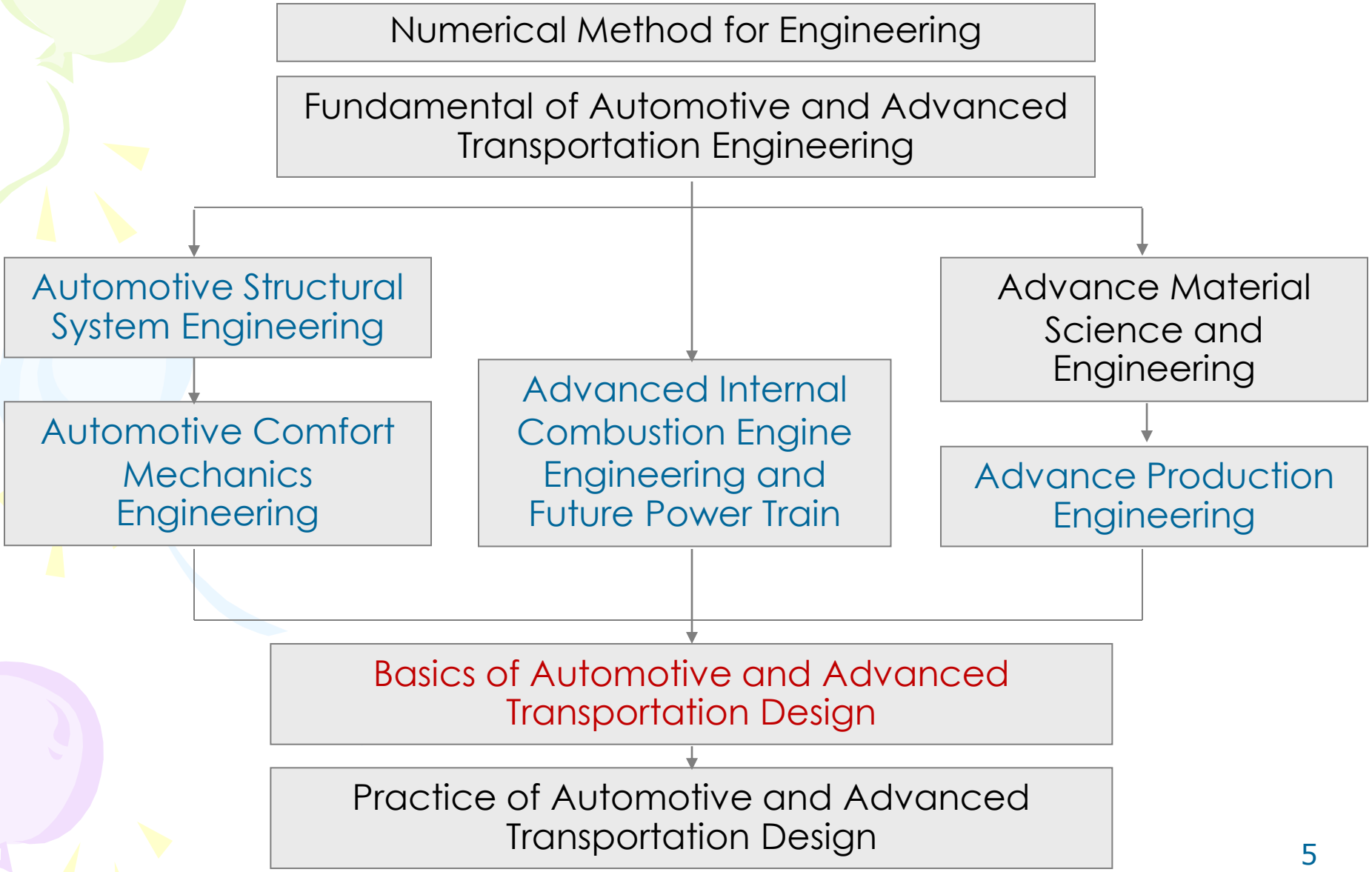
Mathematics	3	credits
Required courses	9	credits
Free elective course	12	credits
Seminar	2	credits
Thesis	12	credits
Total	38	credits

Advisers Decision

- Research Adviser (NSTDA)
- Main Academic Adviser (KMITL/KMUTT)
- Tokyo Tech Co-Adviser

Coursework

TAIST TokyoTech



TAIST
TokyoTech

Curriculum

1st YEAR

Numerical Method for Engineering 3 Credits

- Ordinary Differential Equation and Roots of Equations
- Numerical Methods
- Finite Element Methods

Fundamental of Automotive and Advanced Transportation Engineering 3 Credits

- ICEs and Automotive Engineering Laboratories, Electrical Drive Systems
- AI and IoT for Intelligent Vehicle and Advanced Transportation Engineering
- Image Processing and Machine Vision

Automotive Structural System Engineering 3 Credits

- Analysis of Dynamics
- Suspension and Drive-train Systems
- Structural Mechanics for Automotive

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Curriculum

1st YEAR

Automotive Comfort Mechanics — 3 Credits

- Electronics and Control Engineering
- Aerodynamics and Air Conditioning
- Vibration and Noise Engineering

Advanced Internal Combustion Engine and Future Powertrain — 3 Credits

- Fundamental of Combustion and Diagnostics in Engines
- Zero Emission Technologies
- Future Powertrain for Sustainable Community

Advanced Material Science and Engineering — 3 Credits

- Thermodynamics and Kinetics in Material Science
- Microstructure of Engineering Materials
- Fracture Mechanics and Material Analysis

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Curriculum

1st YEAR

Advanced Production Engineering — 3 Credits

- Fundamentals of Production Technology
- Welding and Joining
- Quality and Operations

Basics of Automotive and Advanced Transportation Design — 3 Credits

- Computer-Aided Design, Engineering and Computational Fluid Dynamic
- Vehicle Dynamics Analysis
- ICEs and Emission Analysis

Practice of Automotive and Advanced Transportation Design — 3 Credits

- ICEs Vehicle Design, EVs Design
- Software and Intelligent System
- Intelligent and Integrated Manufacturing, Image Processing Method

A2TE16

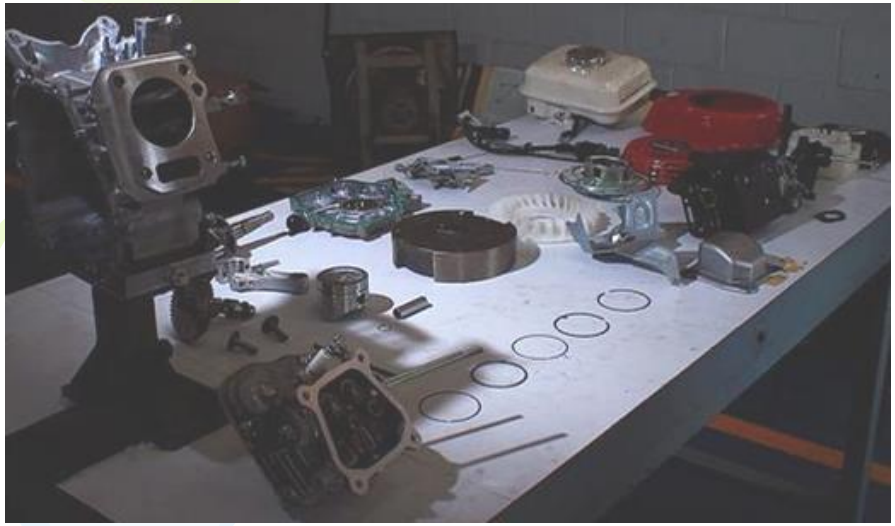
2022 Academic Calendar	Course		Lecturer and Co-lecturer
1st Semester			
2022 Aug.08 - Aug.12	7005 Numerical Methods for Engineering (3-0-6)	1.ODEs & Root Finding	Chaiwat N., KMITL
2022 Aug.15 - Aug.19		2.Numerical Method, Regression, Interpolation	Jarruwat C., KMITL
2022 Aug.22 - Aug.26		3.FEM	Monsak P., KMITL
2022 Aug.29 - Sep.01	7001 Fundamental of Automotive and Advanced Transportation Engineering (3-0-6)	1.ICEs and Automotive Laboratories	Chinda C., KMITL
2022 Sep.05 - Sep.09		2.Evs and Automotive Laboratories	Chinda C., KMITL
2022 Sep.12 - Sep.16		3.Image Processing and Machine Vision	M. Tanaka, Tokyo Tech, Chinda C., KMITL
2022 Sep.19 - Sep.23		4.AI and IoT for Intelligent Vehicle and Advanced Transportation Engineering	Thanaruk T., SIIT
2022 Sep.26 - Sep.30	7101 Automotive Structural System Engineering (3-0-6)	1.Overview on Vehicle Research and Development	H. Yamaura, Tokyo Tech, Jarruwat C., KMITL
2022 Oct.03 - Oct.07		3.Structural Mechanics for Automobiles (+design thinking approach and prototyping skills)	K. Inaba, Tokyo Tech, Szathys S., KMUTT
2022 Oct.10 - Oct.14		2.Suspension and Drive-train Systems	Monsak P., KMITL
2022 Oct.31 - Nov.04	7102 Automotive Comfort Mechanics Engineering (3-0-6)	2.Aerodynamics and Air Conditioning	K. Hanamura, Tokyo Tech, Preechar K., KMITL
2022 Nov.07 - Nov.11		1.Electronics and Control Engineering	M. Yamakita, Tokyo Tech, Nuttawoot D., KMITL
2022 Nov.14 - Nov.18		3.Vibration and Noise Engineering	Danai P., Jakrapop W., KMUTT
2022 Nov.21 - Nov.25	7105 Advanced Production Engineering (3-0-6)	2.Heat and Mass Transfer in Polymer Processing	S. Takushi, Tokyo Tech, Preechar K., KMITL
2022 Nov.28 - Dec.02		3.Welding and Joining	K. Takahashi, Tokyo Tech, Akapot T., KMITL
2022 Dec.05 - Dec.09		1.Fundamentals of Production Technology	M. Yoshino, Tokyo Tech, Kitchanon R., KMUTT
Schedule 09:00-12:00	Course	Lecturer and Co-lecturer	Schedule 09:00-12:00
2nd Semester			
2023 Jan.09 - Jan.13	7002 Basics of Automotive Design (3-0-6)	1. CAD-CAE	Kitchanon R., KMUTT
2023 Jan.16 - Jan.20		2. CAD-CFD	Chi-na B., MTEC
2023 Jan.23 - Jan.27		3. Vehicle Dynamics	Sittikorn L., MTEC
2023 Jan.30- Feb.03		4. ICEs and Emission Analysis	Preechar K., KMITL
2023 Feb.05- Feb.10	7003 Practice of Automotive Design (3-0-6)	1.Practice of Design (1) ICE-EV Vehicle	Amornrat K., KMUTT
2023 Feb.13 - Feb.17		2.Practice of Design (2) FSAE Vehicle	Chinda C., KMITL
2023 Feb.20 - Feb.24		3.Intelligent and Integrated Manufacturing	T. Tanaka, Tokyo Tech, Sontipee A., KMUTT
2023 Feb.27 - Mar.03		4.Software and Intelligent System	Ukrit W., KMITL
2023 Mar.06 - Mar.10	7104 Advanced Internal Combustion Engine Engineering and Future Power Train (3-0-6)	1.Fundamentals of Combustion and Diagnostics in IC Engines	H. Kosaka, Tokyo Tech, Preechar K., KMITL
2023 Mar.13 – Mar.17		3.Future Power Train for Sustainable Community	S. Hirai, Tokyo Tech, Kamthon S., KMUTT
2023 Mar.20 - Mar.24		2.Zero Emission Technologies	K. Hanamura, Tokyo Tech, Suttapat K., KMITL
2023 Apr.03 - Apr.07	7106 Advanced Material Science and Engineering (3-0-6)	1.Thermodynamics and Kinetics in Material Science	Ruangdaj T., MTEC
2023 Apr.17-Apr.21		2.Microstructure of Engineering Materials	Panya K., KMITL
2023 Apr.24-Apr.28		3.Fracture Mechanics and Material Analysis	Vitoon U., KMUTT

Class environment

Prof.Dr.Kamimoto's lecture in Adv. ICEs class

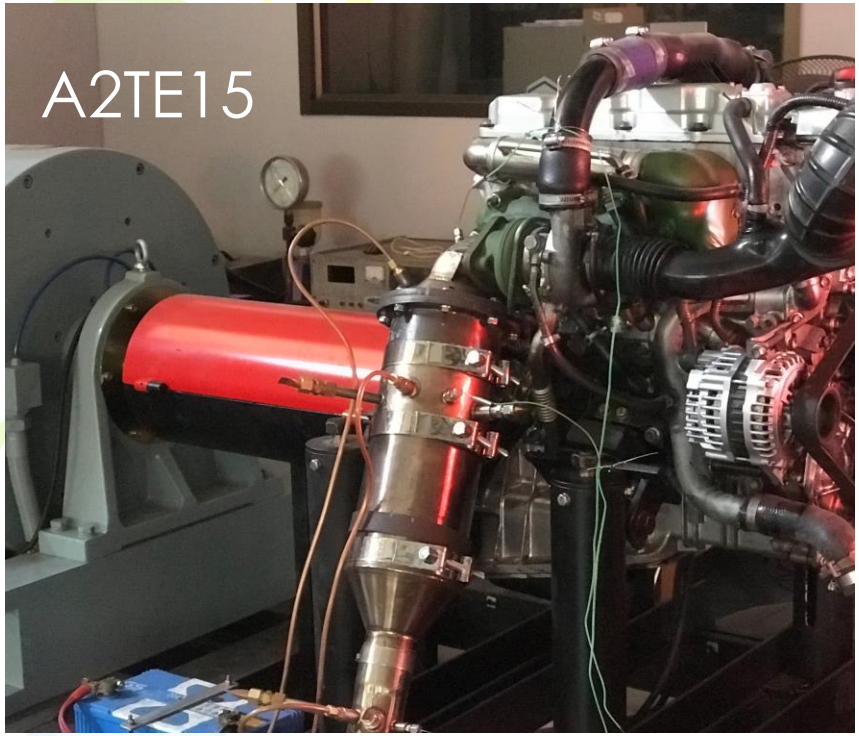
Prof.Dr.Okazaki's lecture in Future Powertrain class

Class environment



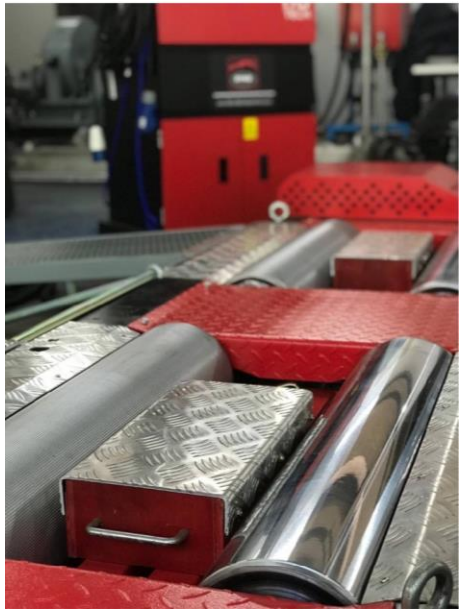
Asst.Prof.Chinda's lecture in ICEs, EVs Vehicles

Prof.Okuma's lecture in CAD-3D Model class


A2TE15

CHEVROLET

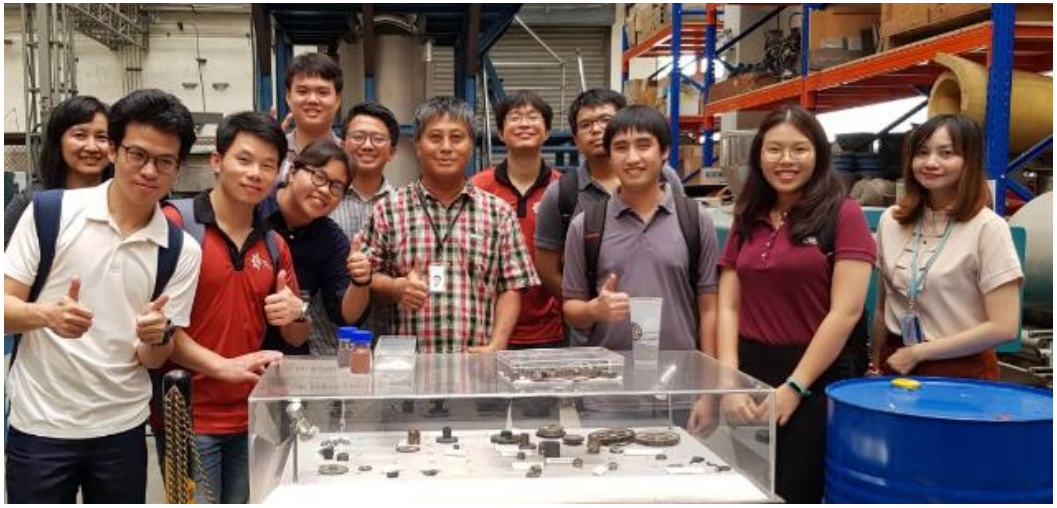
5S.AREA
SAFETY FIRST



DYNO
DEVELOPMENTS

NSTDA-MTEC Laboratories Visit

MTEC Lab. Visit



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Curriculum

2nd YEAR

Seminar in Automotive and Advanced Transportation Engineering 2 Credits

Thesis 12 Credits

International Conference or International Journal

ELSEVIER

Wear

Volumes 458–459, 15 October 2020, 203407

Characterization of biodiesel and soot contamination on four-ball wear mechanisms using electron microscopy and confocal laser scanning microscopy

Pitchaporn Oungpakornkaew [a], Preechar Karin [a], Ruangdaj Tongsri [b], Katsunori Hanamura [c]

2021-2022 Web of Science International Journal Publications

WOS IF 6.186 H. Oo, P. Karin, C. Charoenphonphanich, N. Chollacoop, K. Hanamura, "Physicochemical characterization of direct injection Engines's soot using TEM, EDS, X-ray diffraction and TGA", Journal of the Energy Institute, 2021, 96, pp. 181–191.

WOS IF 5.039 P. Karin, P. Chammana, P. Oungpakornkaew, P. Rungsritanapaisan, W. Amornprapa, C. Charoenphonphanich, K. Sriprapha, "Impact of soot nanoparticle size and quantity on four-ball steel wear characteristics using EDS, XRD and electron microscopy image analysis", Journal of Materials Research and Technology, 2022, 16, pp. 1781–1791.

WOS IF 5.565 H. Oo, P. Karin, N. Chollacoop, K. Hanamura, "Physicochemical characterization of forest and sugarcane leaf combustion's particulate matters using electron microscopy, EDS, XRD and TGA", Journal of Environmental Sciences, 2021, Vol.99, pp.296-310.

WOS IF 3.859 P. Kimthong, P. Wattanapornphan, C. Phongphisutthinan, V. Uthaisangsuk, "Experimental investigations and FE modeling considering microstructural inhomogeneity of laser welded steel-aluminum joints", Archives of Civil and Mechanical Engineering, 2022, 22(1), 29.

WOS IF 2.589 P. Thonapalin, S. Aimmanee, P. Laoratanakul, R. Das, "Thermomechanical effects on electrical energy harvested from laminated piezoelectric devices", Crystals, 2021, 11(2), 141.

WOS IF 2.157 K. Sookchanchai, S. Hlaing, V. Uthaisangsuk, "A geometrical parametric study of side door reinforced beams under lateral impact load", International Journal of Crashworthinness, 2021.

WOS IF 1.269 T. Man, P. Karin, Y. Lin, P. Larpsuriyakul, N. Ohtake, "A Study on Curing Temperature and Fracture Mechanism of Carbon and Glass Fiber Reinforced Polymers Using an Electron Microscopy", International Journal of Automotive Technology, 2021, 22(3), pp. 687–700.

WOS IF 0.505 P. Kimthong, P. Wattanapornphan, K. Waree, V. Uthaisangsuk, C. Phongphisutthinan, "Investigation of homogeneity of chemical and mechanical properties in laser-welded dissimilar steel-aluminum joints", Chiang Mai Journal of Science, 2021, 48(4), pp. 1111–1128.

Research Fields

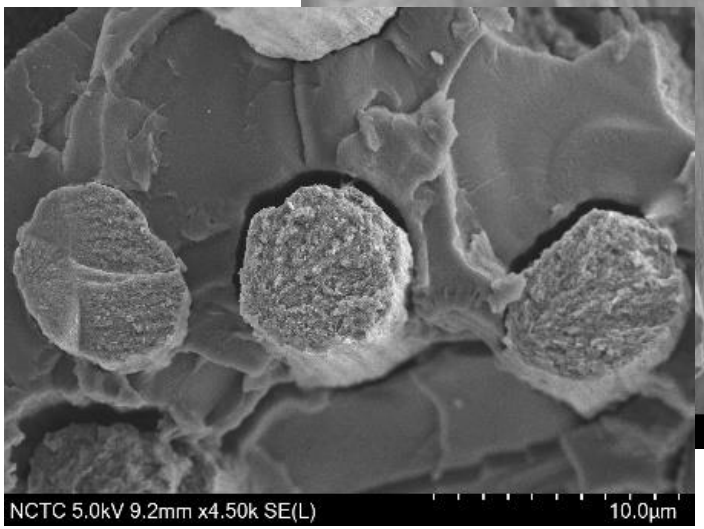
Materials Science and Production Engineering

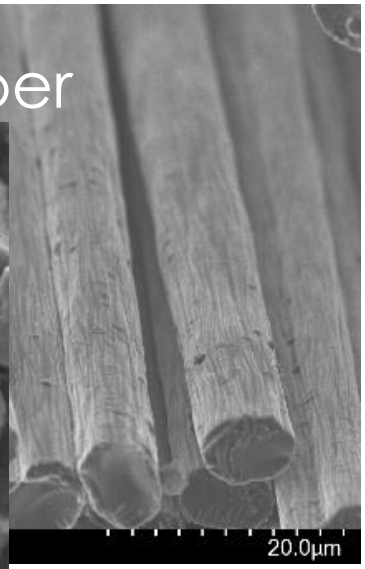
Failure Analysis and Surface Technology, Near Net Shape Metal Manufacturing, Engineering Metallurgy, Metal Deformation Technology, Macro-Micro Modelling of Steel Processing and Forming, Polymer Technology, Ceramic Technology, Composite Materials etc.

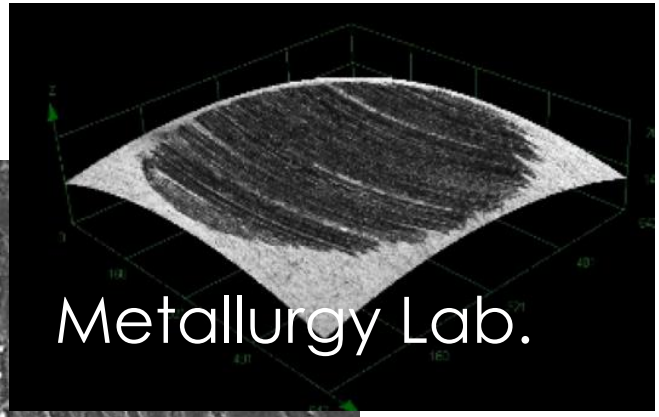
Research Laboratories

Plastic Technology Lab.

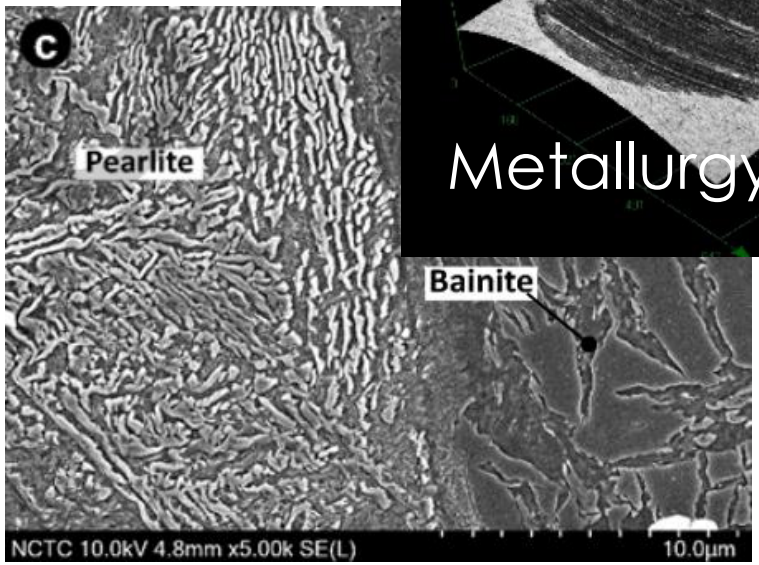
Carbon Fiber







Metallurgy Lab.



Researchers

- **MTEC:** Ruangdaj Tongsri, Sompong Srimanosaowapak, Wuttipong Rungseesantivanon, Patcharee Larpsuriyakul,Dhritti Tanprayoon, Chakkrist Phongphisutthinan, Tanakorn Tantanawat, Pitak Laoratanakul, Witchuda Daud

- **Tokyo Tech:** Naoto Ohtake, Takushi Saito, Kunio Takahashi, Masahiko Yoshino, Sadami Suzuki, Hiroki Akasaka

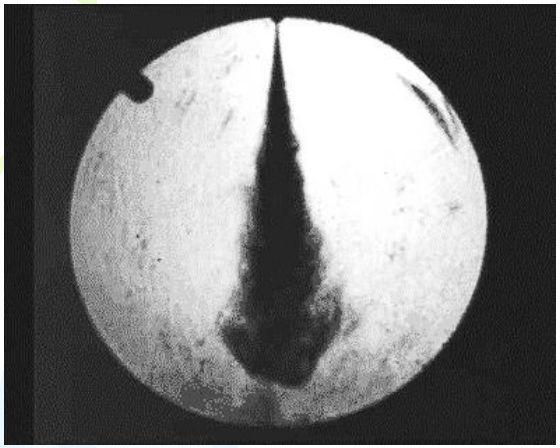
- **KMITL-KMUTT:** Vitoon Uthaisangsuk, Panya Kansuwan, Sontipee Aimmanee, Pattaramon Jongpradist, Kitchanon Ruangjirakit, Jitraporn Wongsa-Ngam, Maturose Suchatawat

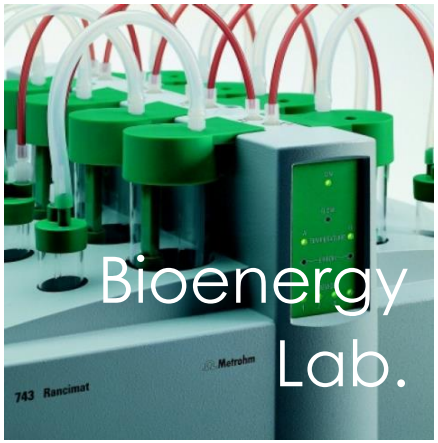
Research Fields

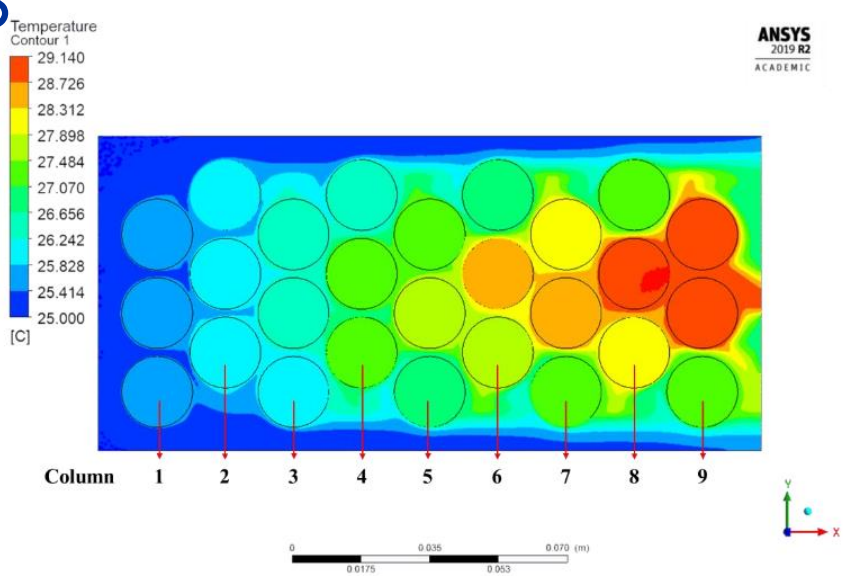
Powertrain Engineering

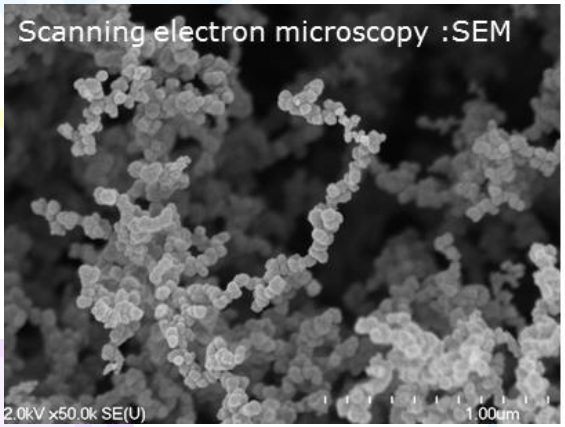
Internal Combustion Engines, Fuels and Lubricants, Wear, Emissions and After-Treatment Technology, Bio-Energy, Electrochemical Materials and System, Battery and Fuel Cell, Electric Motor etc.

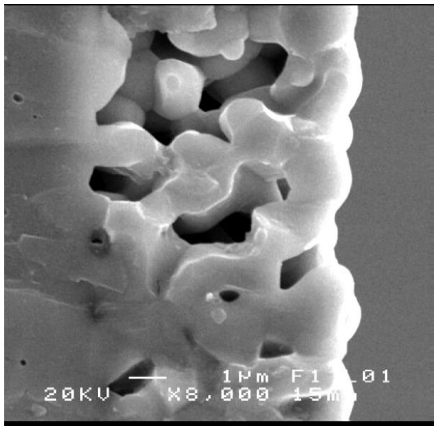
Research Laboratories

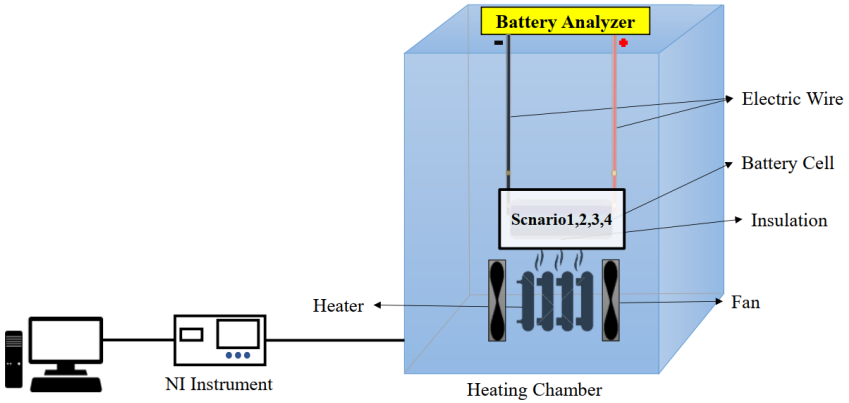












ICE Lab.
Fuel, Lubricants, Emissions

Electrochemical Lab.
Fuel Cells

Battery, Electric Vehicles

Researchers

- **MTEC**: Sumittra Charojrochkul, Nuwong Chollacoop, Pimpa Limthongkul, Worawarit Kobsiriphat, Peerawat Saisirirat, Visarn Lilavivat, Korakot Sombatmankhong, Manop Masomtob

- **Tokyo Tech**: Katsunori Hanamura, Hidenori Kosaka, Shuichiro Hirai

- **KMITL-KMUTT**: Chinda Charoenphonphanich, Jarruwat Charoensuk, Preechar Karin, Yossapong Laoonual, Amornrat Keawpradap, Atikorn Wongsatanawarid, Sutapat Kwankaomeng, Kamthon Septham

Research Fields

Automotive Structural and Vehicle Dynamics

CAD/CAE, Mechanical Design, Optimization and Analysis, Noise and Vibrations, Vehicle Dynamics, Automation and Robotics, UAV Control and Navigation etc.

Research Laboratories

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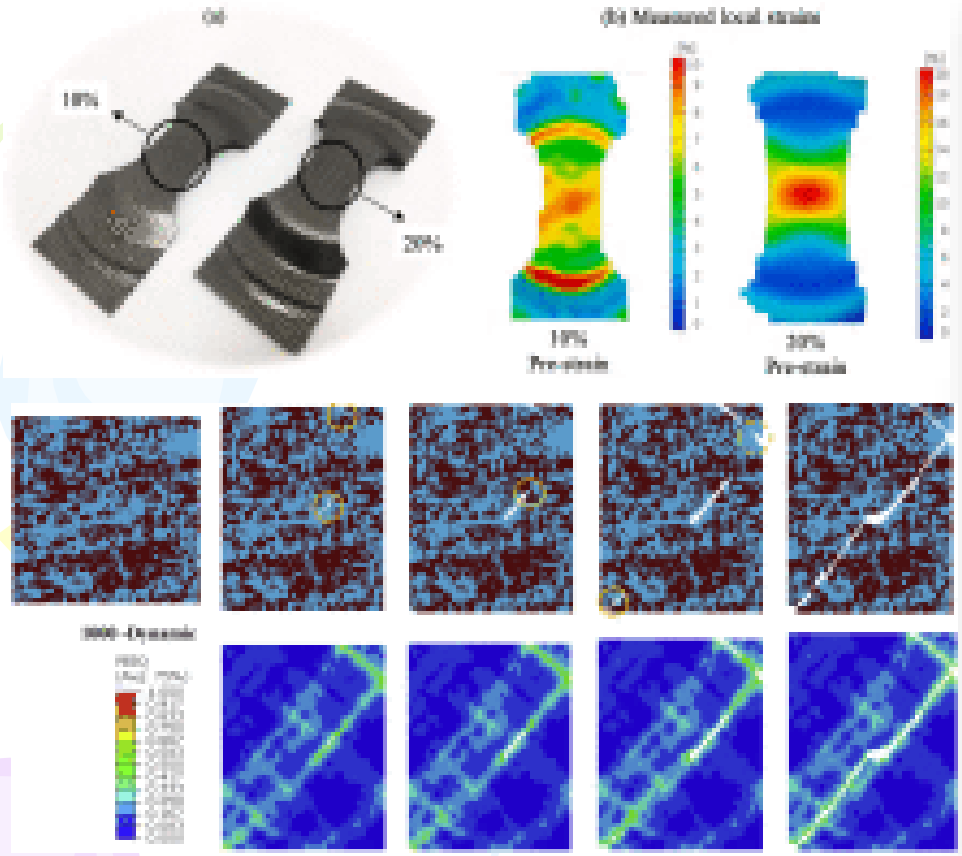

CAD CAE

Automotive
Engineering Lab.

Researchers

- **MTEC**: Chi-na Benyajati, Chadchai Srisurangkul, Korkiat Sedchaicharn, Sarawut Lerspalungsanti, Sittikorn Lapapong, Sutee Olarnrithinun, Nirut Naksuk, Supakit Worasinchai

- **Tokyo Tech**: Masaaki Okuma, Hiroshi Yamaura, Kazuaki Inaba

- **KMITL-KMUTT**: Monsak Pimsarn, Akapot Tantrapiwat, Pongpan Kaewtatip, Szathys Songchon, Annop Ruangwiset

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Research Fields and Researchers

Automotive Electrical, Electronics and Control

Automotive Electrical and Electronics System, Mechatronics and Control, Vehicle Control and Simulation, Image Processing, Intelligent Vehicle, Solar Energy Technology etc.

- **NECTEC:** Teera Phatrapornnant, Kobsak Sriprapha
- **MTEC:** Chadchai Srisurangkul
- **Tokyo Tech**: Masaki Yamakita
- **KMITL-KMUTT**: Nattawoot Depaiwa, Chaiwat Nutong, Danai Phaoharuhansa

Research Laboratories

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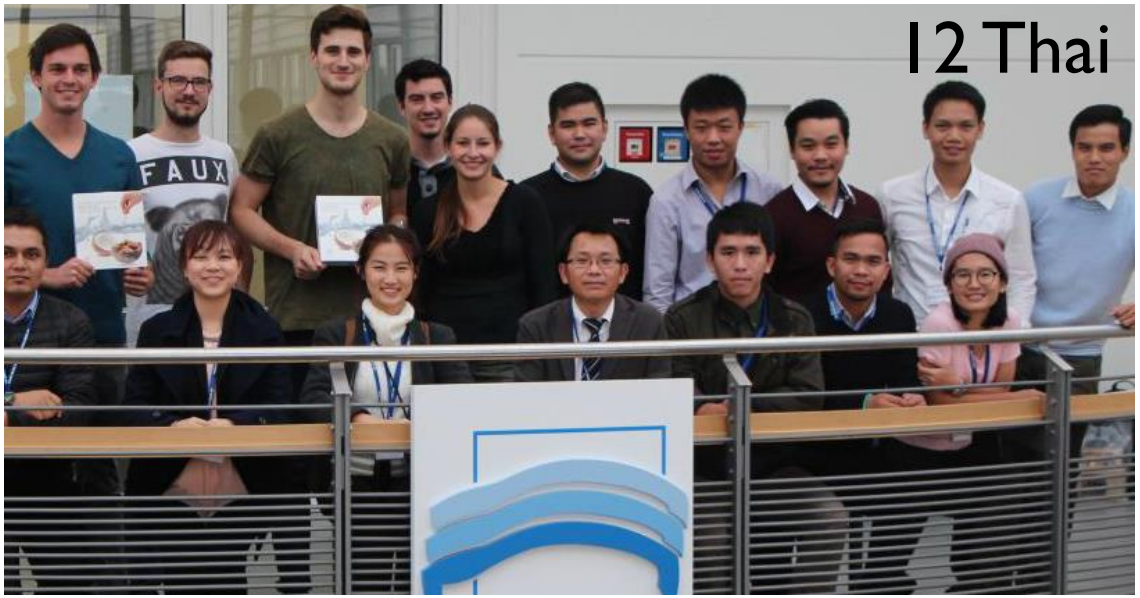
TokyoTech

Embedded Lab.
Image Processing Method,
Driver Assistance Systems

Renewable Energy
Solar Lab.

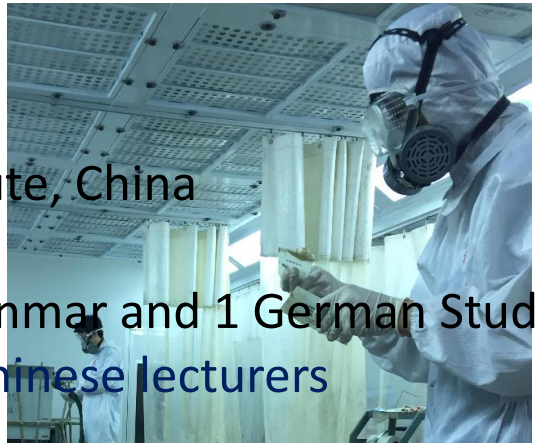
Automotive Industry

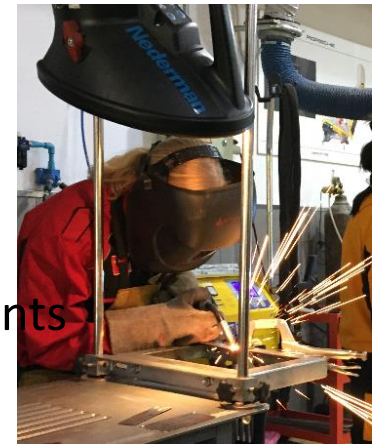
Internationalization
Student Exchange Program: Thai-Japan, Thai-Germany



Internationalization
International Summer School: Thailand-Japan-China

The 1st International Summer School
Automotive Engineering
Nanjing Tech University Pujiang Institute, China
July 23 – August 3, 2018
14 Thai, 7 Chinese, 5 Japanese, 2 Myanmar and 1 German Students
4 Thai, 2 German, 1 Japanese and 1 Chinese lecturers





The 2nd International Summer School
Automotive Engineering
July 22 – August 3, 2019

Graduation

Master of Engineering Program in Automotive and Advanced Transportation Engineering

TAIST-Tokyo Tech Certificate

Master Degree M. Eng.

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TokyoTech

Career of TAIST-Tokyo Tech AE Alumni

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Career of TAIST-Tokyo Tech AE Alumni

Dr.Atsawin Salee, AE1
Ph.D. (MEXT)

Mr. Dittapoom AE3,
Ph.D. student (MEXT)

Mr. Mek Srilomsak AE7,
Ph.D. student (MEXT)

Mr. Pop-Paul Ewphun AE8,
Ph.D. student (JICA)

Mr. Athiwat Butmarasri AE5,
Ph.D. student (MEXT)

Mr.Phyo Zin Ko Ko
AE12, Burmese
NSK Scholarship for PhD
Student, Tokyo Tech, 2020

Dr.Worawat Palasil AE4,
Ph.D. (MEXT/JAXA)

Mr. Saharat AE4,
Ph.D. student (MEXT/JAXA)

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Career of TAIST-Tokyo Tech AE Alumni

TAIST TokyoTech

Mr. Prabij AE5,
Ph.D. student (MEXT/JAXA)

Dr.Manop Masomtob, AE1
Ph.D. (MUA)

Mr. Sakda Thongcharoen AE2
Ph.D. student (Korean G.)

Mr.Perawat Boonpuek AE2
Ph.D. student, Texas A&M University, USA

Ms.Pornrawee Thonapalin
AE6, PhD Student, USA

Dr.Keerasut Suttanarak, AE1
Ph.D.

Dr.Songpon Klinchaeam,
AE1, Ph.D.

Mr.Teerapharp Amornsawaddirak
AE6 PhD Student,
KMUTT, Thailand

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Career of TAIST-Tokyo Tech AE Alumni

Mr.Kantapit Meetam AE6,
PhD Student PSU, Thailand

KMUTNB

Mr.Wisit Wiputgasemsuk AE3
Ph.D. student, KMUTNB

Ms.Thipwipa Sirinakorn AE6
PhD Student, VISTEC, Thailand

KMUTNB

Mr. Ramil Ketvorakul AE2
Ph.D. student, KMUTNB

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Tokyo Tech ANNEX Bangkok Office

Mr. Tatsuya Mizukoshi
International Office
Director, Tokyo Tech ANNEX Bangkok

Dr.Dumrongkiat Ratana-Amornpin
Office Manager, Tokyo Tech ANNEX Bangkok

Samanan Wattanapan (Tong)
Chief Liaison Officer of Tokyo Tech ANNEX Bangkok
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Jitsupa Phiwsa (Minn)
Liaison Officer of Tokyo Tech ANNEX Bangkok
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