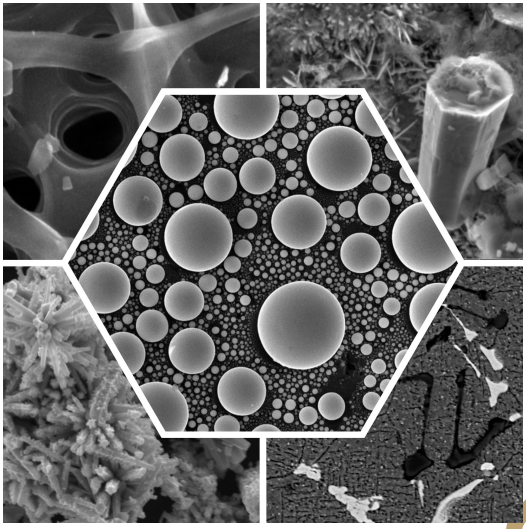
PT. Cipta Mikro Material



Gedung 720, BIT-BPPT, Kawasan Puspiptek
Jl.Raya Serpong, Tangerang Selatan, Banten 15314

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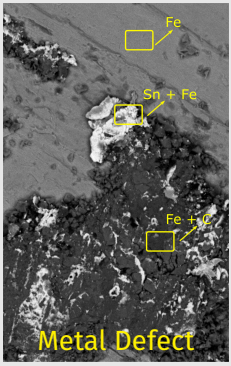
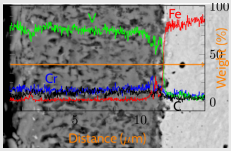
http://www.cipta-mikro-material.com/

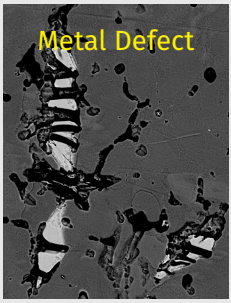
Youtube: cipta_mikro_material

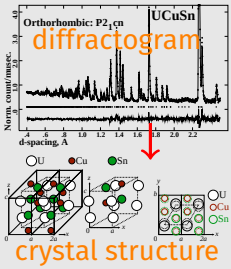
Instagram: cipta_mikro_material

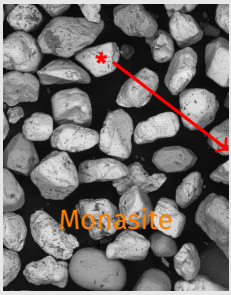
2020











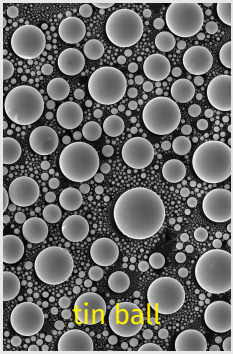
About Us

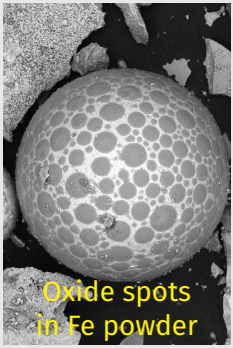
PT. Cipta Mikro Material (CMiM) has been established on 5 September 2017 with the vision of maximizing added values of any raw materials with automation. CMiM has been projected to be a holding company of various endeavor to achieve the vision. Such endeavors would crystallize to various subsidiaries, ranging from materials characterization & synthesize, instrumentation and automation, as they need to focus on certain aspects in order to succeed.

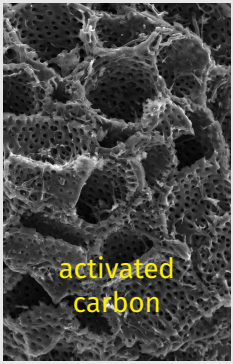
CMM currently conducts materials test, characterization, analysis and development, mostly microscopically. We also perform the related trainings and consultations to enhance the skill on the microscopic characterization. Most of the instruments used are the Scanning Electron Microscopy (SEM), Energy Dispersive Spectroscopy (EDS) and the X-ray Diffraction. Furthermore, we offer the fractography and the failure analysis, as well as the product innovation for industries and researchers.

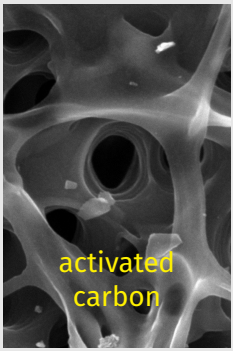
The increase of the added value, product efficiency and failure in manufacture mostly commence from materials, microscopically. Some questions of interest are, but not limited to, the origin of the fracture, the chemical elements contribute to the defect, the chemical elements of the specimen, the morphology of the specimen surface due to a particular treatment, the thickness and diffusion of the coating material in the coated specimen, the quality of the cast iron and spun coating, the minerals contained in the specimen, crystallographic structure of the specimen. Such information can not be obtained quantitatively without any microscopic characterization. We extract the information mostly using the Scanning Electron Microscope (SEM), Energy Dispersive Spectroscopy (EDS) and X-ray Diffraction (XRD).

In an effort to share expertise on the microscopic test and characterization, some trainings or hands-on workshops are conducted. Some of the materials are related to the X-ray diffractogram analysis, SEM and EDS experiment and analysis. We also provide consultations on the failure analysis and more specific subject of interest. Free videos on the subjects have been distributed through Youtube and Instagram in channel cipta_mikro_material. The materials in Youtube is especially of importance for those seeking the know-how to code the diffraction analysis software, which is notoriously difficult.









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Vision

To be the best holding company to maximize added values of any raw materials with automation in 2030.

Mission

To construct standardized facility to test, characterize, analyze and develop materials up to nano scale

To foster subsidiaries, ranging from materials characterization & synthesize, instrumentation and automation, in order to achieve the vision.

Objective

To test, characterize, analyze and develop materials up to nano scale

To perform industrial consultation

To conduct microscopic characterization workshops

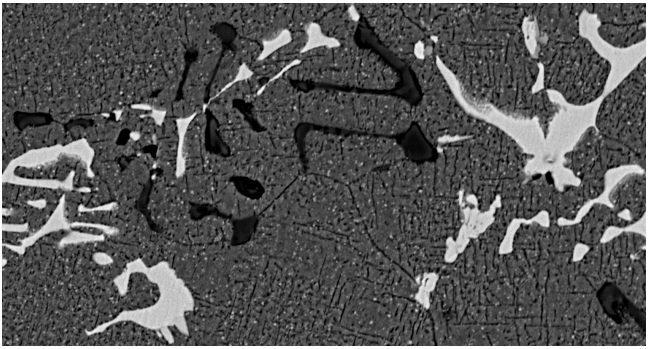
To foster innovation, creativity and altruism at work

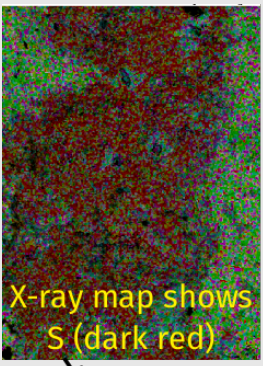
To provide seed funds for the future subsidiary

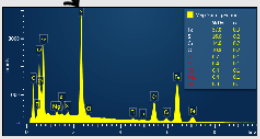
To maintain synergy among subsidiaries

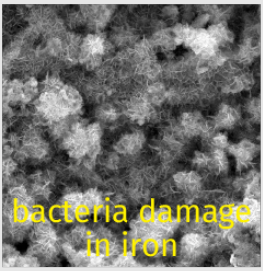
Tagline

Beyond commitment









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Services

Table 1: *SEM (Scanning Electron Microscope)*[a] & *EDS (Energy Dispersive Spectroscopy)*[b]

Test	Description
SEM & EDS	backscattered and secondary electron images point/*linescan*/*mapping* EDS
SEM	backscattered and secondary electron images
EDS	point/linescan/mapping EDS

[a] Backscattered, secondary and mixed SEM images with 3 different magnification are provided.

[b] EDS titik didapatkan sebanyak tiga untuk satu posisi gambar SEM.

Table 2: *Sample Preparation*

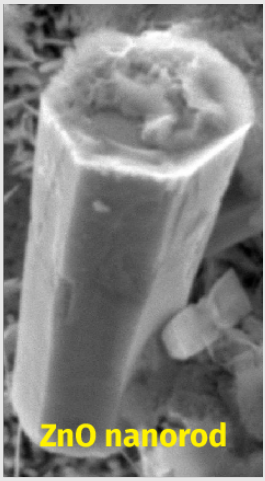
Preparation	Description
Polishing	for high magnification of bulk sample
Etching	to clean up the surface of interest
Powder cut	useful to see powder cross section
Diamond cut	to cut hard specimen

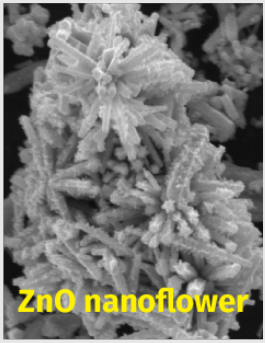
Table 3: *XRD (X-ray Diffraction)*

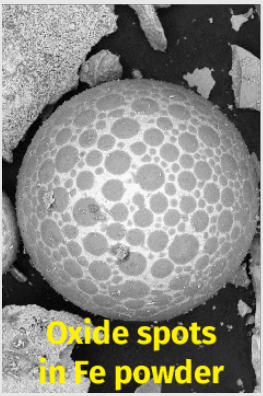
No.	Services	Obtained
1	Data	cps vs. scattering angle
2	Analysis ($\leq$ 5 crystal phases)	Rietveld analysis result
3	Analysis ($>$ 5 crystal phases)	Rietveld analysis result
4	Report	Report on Rietveld analysis and crystal structure(s)

Table 4: *Custom Services*

Services	Description
Consultation	
Failure Analysis	Elaborative discussion needed
Fracture Analysis	







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Costs

Table 1: *SEM and EDS*[a]

No.	Test	Industry	Researcher/Student
1	SEM	550	450
2	Point EDS [b]	400	300
3	Aditional 1 EDS point[c]	100	50
4	map/line EDS	600	500
5	SEM & EDS point	800	700
6	SEM & EDS (map/line)	1.000	900
	One Day Service (ODS)	+200	+150
	> 5 samples	-100	-100

[a] In thousand rupiahs. Results are available within 5 working days, if not ODS
[b] Maks. 3 EDS points at 1 SEM position.
[c] at an existing SEM position

Table 2: *SEM Sample Preparation*[b]

Etch	Polish	Optic. Micr.	Powder Cut	Diamond Saw
75	250	100	75	600

[b] Costs in thousand rupiahs.

Table 3: *XRD (X-ray Diffraction)*[c]

No.	Test	Industry	Researcher/Student
1	Data	500	400
2	Analysis (≤ 5 crystal phases)	800	700
3	Analysis (> 5 crystal phase)	1.000	900
4	Report[d]	1.500	1.400

[c] Costs in thousand rupiahs.
[d] on data and analysis

Table 4: *In-house training/workshop*[e]

No.	Topics	Level	Day	Cost
1	SEM, EDS & XRD	Introduction	1	2.500
2	SEM, EDS & XRD	Basic	3	5.000
3	SEM, EDS	Basic	2	3.000
4	SEM, EDS	Intermediate	3	4.000
5	XRD	Basic	2	3.000
6	XRD	Intermediate	3	4.000

[e] Costs in thousand Rupiahs. Costs for on-site and online training, please contact us.

Agus Purwanto, Ph.D

Microscopic Characterization Expert

agus.purwanto@cipta-mikro-material.com

About me —

Agus has a strong background in microscopic characterization which includes scanning electron microscope, neutron and X-ray diffraction. He contributed to several projects including magnetism and failure analysis. His scientific experiences include hands on experiments and analysis at several neutron scattering facilities in the U.S., Canada, Japan and Indonesia. He is fluent in JAVA, Python and Go programming languages. Scopus h-index: 10.

Education

1996 Ph.D. in Physics — New Mexico State University, U.S.A.
Magnetic Neutron Diffraction in Uranium Intermetallics.

Selected Publications (first author)

2010 Cation distribution in spinel (Mn, Co, Cr)$_3$O$_4$ at room temperature. *Journal of Applied Crystallography*, 43:394-400

2005 Structural studies on new superionic on (AgI)$_{0.8}$-(NaPO$_3$)$_{0.2}$ and on (AgI)$_{0.7}$-(NaPO$_3$)$_{0.3}$ at room temperature. *Journal of neutron research*, 13:169–173.

2005 X-ray diffraction on (AgI)$_{0.7}$-(NaPO$_3$)$_{0.3}$ and (AgI)$_{0.7}$-(NaPO$_3$)$_{0.2}$ composites. *Materials Research Bulletin*, 40/1:47–54.

2004 Disappearance of βAgI in (AgI)$_{0.7}$-(NaPO$_3$)$_{0.3}$ composite at room temperature. *Solid State Ionics*, 171/1-2:113–119.

1996 Crystallographic and magnetic structure of UCu$_{1.5}$Sn$_2$. *Journal of Applied Physics*, 79:6411.

1996 Low-temperature magnetic structure of UNiGe. *Physical Review B*, 53:758–765.

1994 Magnetic ordering in U$_2$Pd$_2$In and U$_2$Pd$_2$Sn. *Physical Review B*, 50:6792.

Selected Experiences

2005-2008 Spectrometry Group Leader. — National Nuclear Energy Agency
Coordinated activities of three neutron spectrometers, repaired and modified the data acquisition program code of Small Angle Neutron Spectrometer.

2003-2004 Foreign Visiting Scientist. — High Energy Accelerator Research Organization, Japan
Performed neutron diffraction experiment and analysis on superionic and magnetic materials, coded data analysis software.

1993-1995 Graduate Research Assistant. — Los Alamos National Laboratory, New Mexico University, U.S.A.
Conducted neutron diffraction experiment and analysis, published scientific results, wrote doctoral dissertation.

Dr.-Ing. Pudji Untoro

High Temperature Materials Expert

pudji.untoro@surya.ac.id

About me —

Pudji has a vast amount of collaboration including scientific and technical accomplishment, especially related to renewal energy sectors.

Education

Dr.-Ing. in Mechanical Engineering Energy System
RWTH Aachen, Germany
Physics, advance materials and high temperature corrosion.

Innovation

Permeability-based Corrosion Test Instrument, *Prototype*

2008 Vortex plasma trex to save diesel fuel, *Patent*

2008 Additive for diesel fuel and Marine fuel oil, *Patent*

Biodiesel and bioethanol synthesize process apparatus, *Prototype*

2009 Apparatus for producing a spiral catalyst substrate, *silver medal 20th international invention, innovation and technology Exhibition ITEX 2009, Kuala Lumpur, Malaysia*

2009 Apparatus to make rubber latex composite as an aspalt replacement, *101 most prospective Indonesian innovation, Ministry of Research of Indonesia*

2011 Low concentration bioethanol ultra stove, *nominated 103 innovation, Ministry of Research of Indonesia*

Selected Experiences

Skilled in

Ultrasonic process	Powder metallurgy process
Thermogravimetry analysis	Mass spectrometry

Skilled in TEM sample preparation

Carbon coating	Plasma Cleaner
Ion Milling	Dimple grinder
Double Jet Thinning	

Researcher — National Nuclear Energy Agency
International collaboration on high temperature materials and electron microscope, *Principal Investigator*

2017 Anggota — Dewan Energi Nasional
Designing and formulating the national energy policy. Set a general plan of national energy. Establishing measures to mitigate the condition of crisis and energy emergency. Monitoring the implementation of cross sectoral energy policies.

Dr.-Ing. Arbi Dimyati

Electron Microscope Expert

arbi.dimyati@gmail.com

About me —

Arbi has a strong background in electron microscopy in Germany. His current innovation is an Arc Plasma Sintering Instrument which produces high temperature plasma bursts useful to synthesize materials. He is also skillful in a mechanical and electrical engineering works. He sometimes finds himself enjoying event organizer works.

Education

Dr.-Ing. in Mechanical Engineering Energy System
RWTH Aachen, Germany
Advanced materials and electron microscope.

Selected Publications

2018 A new precipitation-hardened austenitic stainless steel investigated by electron microscopy. *International Journal of Technology*

2017 Microscopy of Alloy Formation on Arc Plasma Sintered Oxide Dispersion Strengthen (ODS) Steel. *IOP Conference Series: Earth and Environmental Science*

2017 Mechanosynthesis of A Ferritic ODS (Oxide Dispersion Strengthened) Steel Containing 14% Chromium and Its Characterization. *IOP Conference Series: Materials Science and Engineering*

2017 Low-Temperature Synthesis of Vertically Align ZnO Layer on ITO Glass: The Role of Seed Layer and Hydrothermal Process. *IOP Conference Series: Materials Science and Engineering*

2017 High temperature Oxidation of ODS alloy with zirconia dispersions synthesized using Arc Plasma Sintering. *IOP Conference Series: Materials Science and Engineering*

Selected Experiences

Menguasai pengoperasian mikroskop elektron

TEM JEOL 3000EX 200kV	SEM LEO 30kV
HRTEM JEOL 3000FX 200kV	SEM JEOL 2560LA
HRTEM JEOL 4000FX 400kV	AES PH 600 (Auger)
ATEM Phillip CM300 200kV	STEM FEI TitanS 300kV
EFTEM FEI Tecnai F2 200kV	HRTEM FEI TitanT 300kV

Menguasai metoda TEM dan SEM

Electr. Spectr. Imaging	EDX STEM/SEM Mapping
Energy Filtered Imaging	Electron diffraction
TEM tomography	Electr. Energy Loss Spectr.

Convergence Beam Electron Diffraction

Menguasai teknik preparasi sampel TEM

Carbon coating	Plasma Cleaner
Ion Milling	Dimple grinder

Focus Ion Beam FEI Strata 250

2006-2007 Performance Tester. Juelich
STEM dan HRTEM FEI TitanS+T 300kV.