

Diamante Magazine

Diamond Tools Experience



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nanoTRUCK

Meeting Place Nanoworlds

Mobile, multifunctional and an „eye catcher“ – the nanoTruck creates an attractive stage for nanotechnology.

Take nanotechnology out of the laboratories and inform people about this promising field of technology and promote their ideas – the German Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF) is following this goal with its information campaign „nanoTruck – Meeting Place Nanoworlds“. But how can we reach as many people as possible throughout the country? And how do you explain the complex world of nanotechnology in an interesting, clear and compact way? The answer is the nanoTruck, a touring exhibition and communication centre which presents nanotechnology live.



March 4 – 6, 2012


Wenden · Rathausplatz (town hall square)

Sun: 2.00 – 6.00 p.m. • Mon/Tue: 8.30 – 10.00 a.m. / 1.00 – 3.00 p.m.

„Experience, explore, engage with nano“

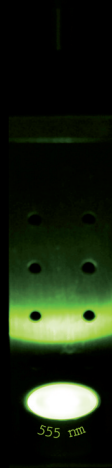
The nanoTruck opens its doors for the conferees, the interested public and the press including

„Ever heard of nano?“ several short presentations, approx. 10 min each

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FOR THE METAL, CERAMIC AND CARBIDE INJECTION MOLDING INDUSTRIES

powder
injection
moulding

INTERNATIONAL



in this issue

Developments in Ti-MIM
PIM at PM2012 Yokohama
CIM at Philips Lighting

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For the world of Powder
Metallurgy....

POWDER
METALLURGY
REVIEW

VOL.7 NO.1
SPRING 2013



POWDER METALLURGY IN JAPAN
DEVELOPMENTS IN FERROUS PM MATERIALS
PROFILE: GKN POWDER METALLURGY

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Research, Development, and Production Company Metal-Composite, LLC



Metal-Composite, LLC is established in 2012 for realization of complex programs in the field of development and production of metal matrix composite materials for Russian and foreign customers.

Office and production facility is positioned on the territory of Ulyanovsk Nanotechnological Center, which is situated in the free economic zone "Zavolzhie". Convenient place, excellent centralized modern engineering and transport infrastructure, tax preferences make necessary backgrounds for successful development.

Production of the company – aluminium matrix composite materials - it is low weight, corrosion resistance, thermal conductivity of aluminium alloys plus better strength, stiffness, lower thermal expansion coefficient and new functional properties. We welcome partners for cooperation in the field of MMC!

Main directions

MMC for electro techniques and electronics :

- substrates for LEDs, semiconductor lasers;
- back plates for IGBT modules;
- PCB with MMC base;

MMC for nuclear industry:

- tubes and plates for perspective casks;
- construction materials for spent fuel storagepools;
- safety absorbing materials;

MMC for motor makers:

- forced pistons;
- light, low wear brake disks;
- gears with local reinforcement;

MMC for device makers:

- SHF housings, waive guides, leads;
- bases, racks, guide frames;
- functional materials;

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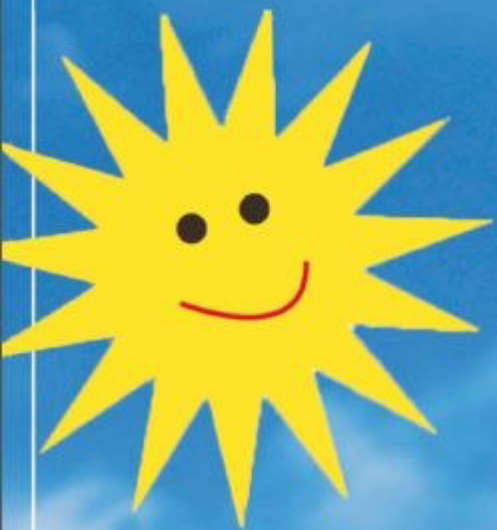
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Quality unites – a fact that our customers and we discover time and again with every new project. Together we develop solutions that give our partners the competitive edge in their business. Thanks to this good cooperation, SMS Meer is a leading international company in heavy machinery and plant engineering.

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grain-size control
by nanostructure

nanostructure
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and PEMFC's (Zentallium®)

nanostructured
cement/concrete



Power to Gas to Fuel Zoz Hydrogen Technology

Nanostructures for Zero Emission Future
Transportation & Energy

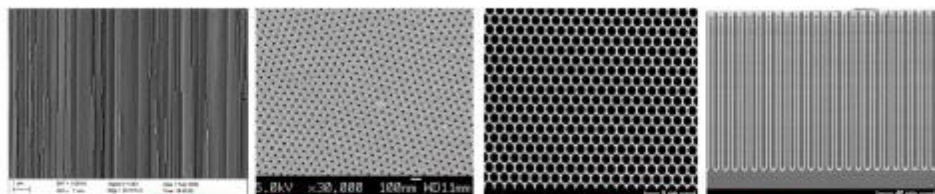
Zoz Zero Emission Vehicle Fleet autonomous H2-driving in the counties Sauer-/Siegerland

- [phase I] 10 ZEV's in well diversified and paid use,
battery electrified 12 E-charging stations
- [phase II] upgrading of ZEV's to H2-power (PEMFC/H2Tank2Go®),
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SmartMembranes is a producer of high quality macro and nano porous alumina and silicon membranes with high ordered structures and a narrow pore size distribution

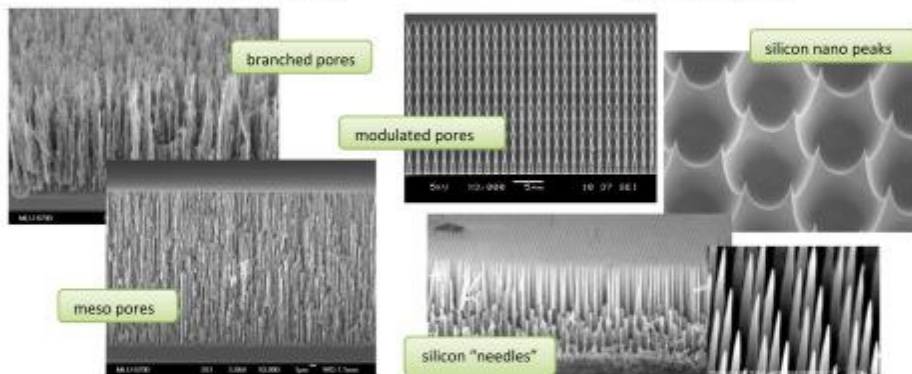


nano porous alumina

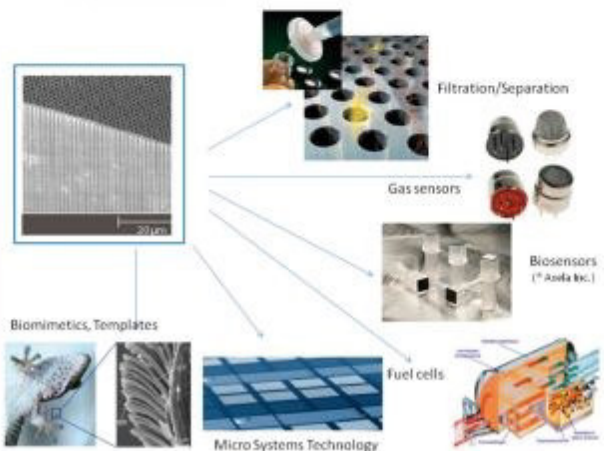
Ø Pore: 20-400 nm

macro porous silicon

Ø Pore: 0.8-15 µm



- precise pore diameter (deviation < 10%)
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VOL. 3 NO. 1
SPRING 2014

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PM TOOLING DESIGN AND OPTIMISATION
POWDER METALLURGY GEARS
HAGEN SYMPOSIUM 2013

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VOL. 3 NO. 1 MARCH 2014

FOR THE METAL, CERAMIC AND CARBIDE INJECTION MOULDING INDUSTRIES

POWDER INJECTION MOULDING INTERNATIONAL



In this issue

Company visit: Ortho Organizers
HIP of MIM components
Profile: Centorr Vacuum Industries

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www.malvern.com

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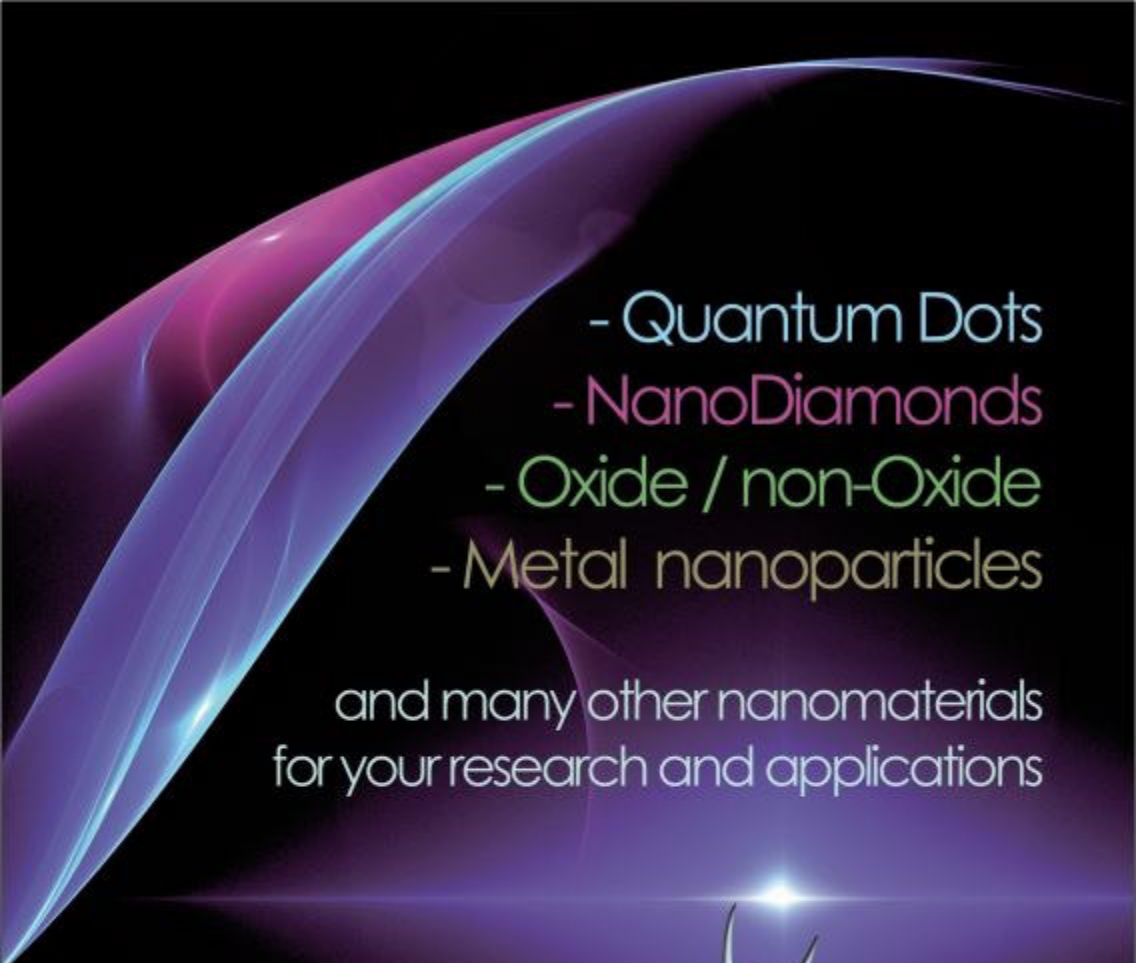
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-  PARTICLE SHAPE
-  RHEOLOGICAL PROPERTIES
-  MOLECULAR WEIGHT
-  MOLECULAR SIZE
-  MOLECULAR STRUCTURE
-  SOLUTION VISCOSITY
-  ZETA POTENTIAL
-  CHEMICAL IDENTIFICATION

New

NanoSight: Nano Particle Tracking

NanoSight has developed and commercialized a unique and patented technology, Nanoparticle Tracking Analysis (NTA). Currently the largest applications area for NTA is in life sciences, for the

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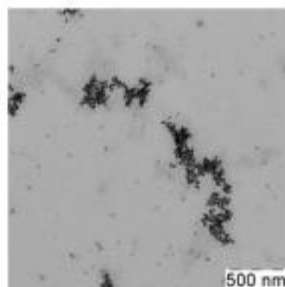




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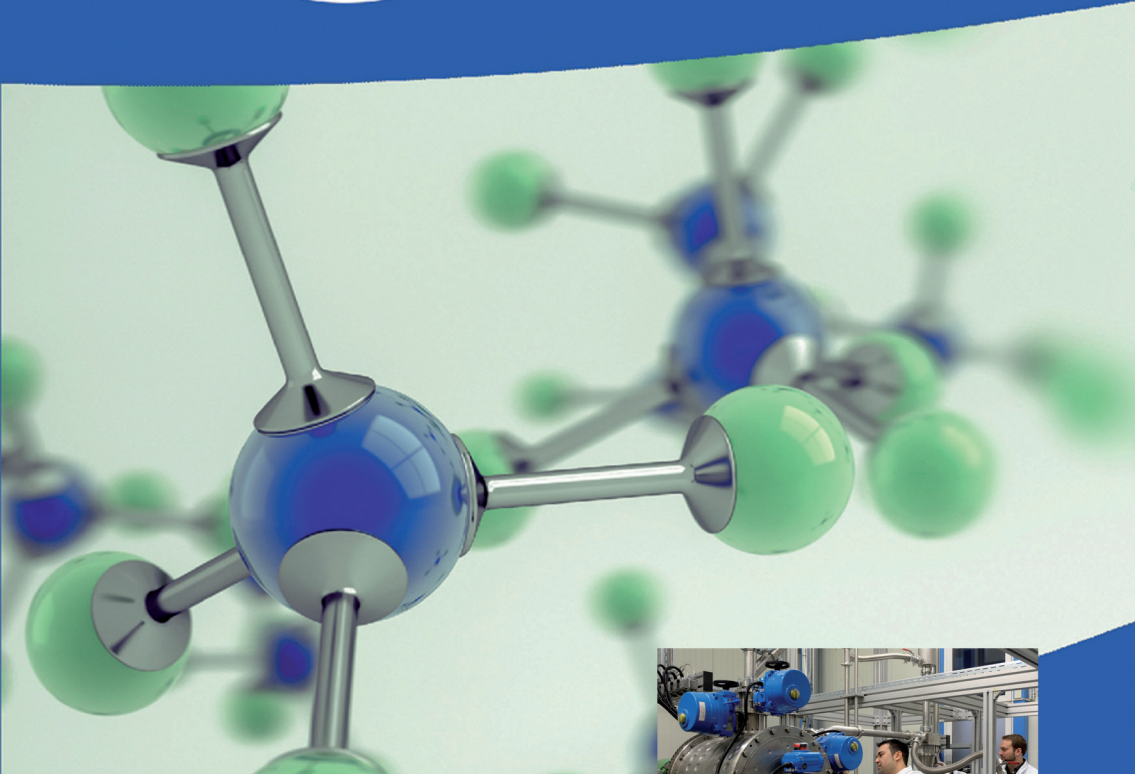
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Bluewave - Measures wet or dry multi mode distributions of nano and micron particles from 10 nm to 2800 μm .



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bringen können, bringen wir das Messgerät
zu Ihrer Probe!”**



By

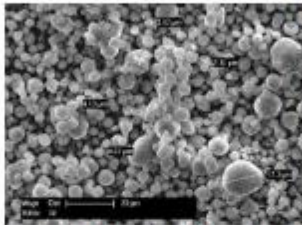


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nanoHVOF®-powder – It's fine to work with

Thermico has developed plasmaspherodized powder <10 µm



In collaboration with aviation industry, Thermico developed nanoHVOF®-powders. The most specific in nanoHVOF®-powder is the controlled plasma treatment that results dense and spherical particles with a submicron and nano-scale grain size below 10µm. This method can be applied on metallic raw materials such as WC-CoCr as well as on MCrAlY or Aluminum to produce nanoHVOF®-powder.

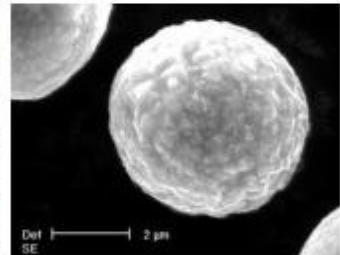
Thermico also supplies various powders, based on tungsten and nickel raw material.

Thermico sets standards with its plasmaspheroidization plant-technology



The plasmaspheroidization plant-technology is unique and optimized for melting powder particles into nanoHVOF®-powders. This allows the production of nanostructured WC-based agglomerated and sintered powders with grain-sizes of less than <math><10\mu\text{m}</math>.

This technology even sets standards for thermal coating. Nano-scaled WC and Cr3C2 powders with a grain size less than 10 µm are receivable in a spheroidized form now.



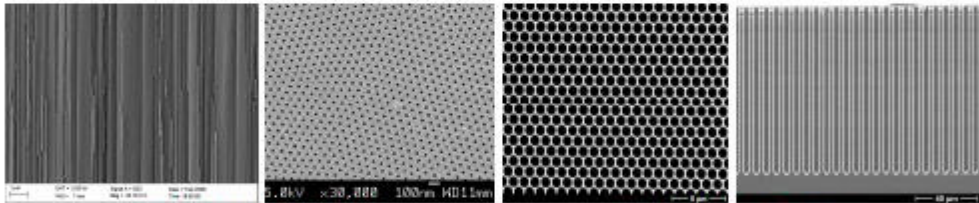
Caused by the dense structure of these powder grains, smooth and very resistant ID-coatings get possible.

Thermico enables thermal spraying for challenging applications

Thermico has well-established the nanoHVOF-coating of inner diameters down to 63 mm by using a rotation torch. This is the perfect solution because despite of a small coating distance and a low thermal performance of the HVOF-plant (<math><40\text{kW}</math>) pore-less coatings with a roughness of <math><1,3\ \mu\text{m}</math> can be produced.

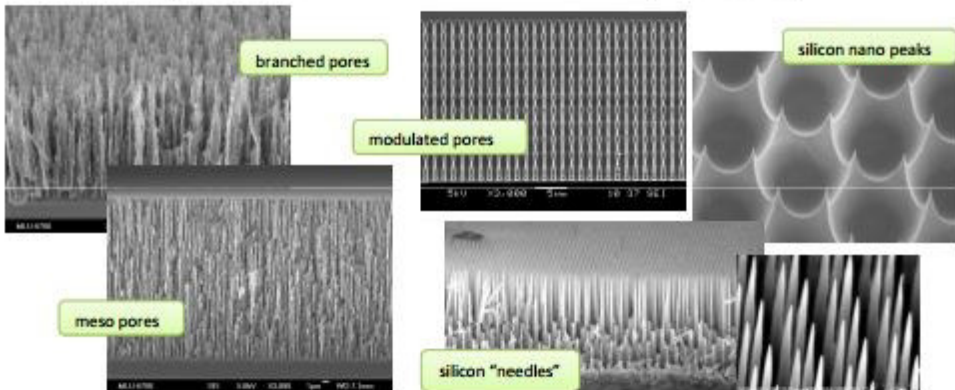
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SmartMembranes is a producer of high quality macro and nano porous alumina and silicon membranes with high ordered structures and a narrow pore size distribution

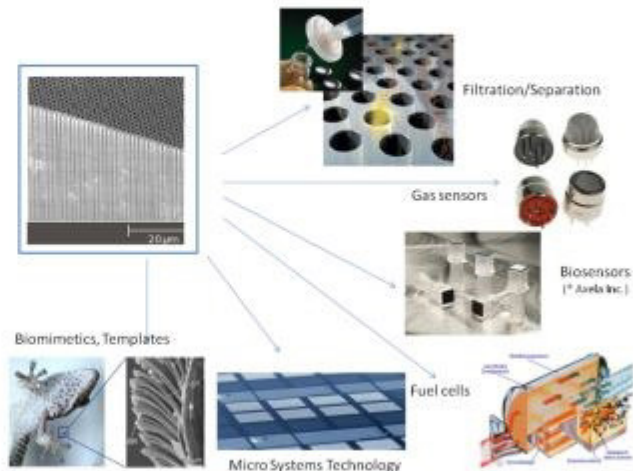


nano porous alumina
 \varnothing Pore: 25-400 nm

macro porous silicon
 \varnothing Pore: 0.8-15 μ m



- precise pore diameter (deviation < 10%)
- high aspect ratio
- strongly parallel pore growth
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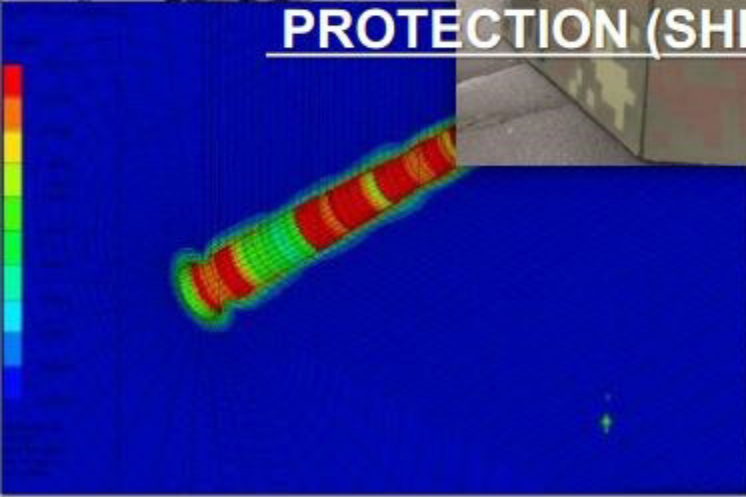
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LA DEFENSA NACIONAL



DEVELOPMENT OF
COMPOSITE CONCRETE
WALLS FOR THE PHYSICAL

PROTECTION (SHIELDING) OF MILITARY BUILDINGS.





TOWARD JOSAI'S 50TH ANNIVERSARY

Josai University was founded in 1965 when the postwar recovery was well underway and demands were raised for a new role for Japan in the international community. The university has already turned out more than 90,000 outstanding graduates by leveraging the philosophy of its founder for a place of education and research, and aspiring to educate students active in the international community by promoting international education programs designed to cultivate the human qualities, outlook, knowledge and skills necessary to demonstrate leadership in the international community.

The university has earned a strong reputation as a training ground for civil servants and teachers, and we are proud of our stable graduate employment rates even in the current bleak economic climate and employment outlook. As far as employment is concerned, substantial support structures and a focus on education, sports and human education to cultivate trustworthy working adults have brought results.

As an international university with close contacts to the local community, Josai University collaborates with local government, corporations and many overseas sister universities to educate students who are capable of acting on the global stage, as well as human resources who can contribute to community development.





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