PURE RESOURCES LIMITED | ASX:PR1

Major Milestone in Pure Thermal Management Strategy: Peer Reviewed Validation, In House CNTF Fabric Manufacturing and Directional Heat Routing

Pure reports a major advance in its Pure Thermal Management strategy with Rice University: peer reviewed publication and successful in-house manufacturing of carbon nanotube fibre fabrics, together with the directional heat routing potential of the fibre, a capability copper and aluminium cannot provide. Technical detail is held confidential ahead of a prospective patent filing.

HIGHLIGHTS

- Peer reviewed research published by the Rice University team in the journal Small confirms that carbon nanotube fibre (CNTF) textiles deliver high surface areas and high convective heat transfer, moving large quantities of heat with a small temperature difference.
- The Rice and Pure partnership has successfully manufactured CNTF fabrics in house using a range of production methods, a key milestone on the pathway to data centre thermal management applications.
- CNTF combines high thermal conductivity with the flexibility to be knitted and woven, unlike conventional brittle carbon fibre or graphitic fibre.
- To protect commercial value, the processing methods, conditions and analytical detail are held confidential ahead of a prospective patent filing and licensing process.
- Single CNTF determined as intrinsically anisotropic, conducting heat preferentially along the fibre axis, a directional capability that isotropic copper and aluminium cannot provide. Heat can be routed along engineered pathways from a concentrated hotspot to a rejection surface, rather than diffusing uniformly as it does in metals.
- Because CNTF is textile processable, fibre orientation becomes a design parameter, allowing 3D knitted and braided architectures that place high conductivity pathways exactly where heat must travel, reaching places that machined metals cannot.

ANNOUNCEMENT

Pure Resources Limited (ASX: PR1) ("Pure" or the "Company") is pleased to provide an update on its Pure Thermal Management strategy, the carbon nanotube fibre ("CNTF") thermal management programme conducted in collaboration Rice University (Houston, Texas).

Peer reviewed research published by the Rice University team in the journal Small demonstrates that fabrics made from CNTF enable high surface areas and high convective heat transfer coefficients, moving large amounts of heat with a small temperature difference. Building on this published work, the Rice and Pure partnership has successfully achieved in house CNTF fabric manufacturing using a range of production methods. To protect the commercial value of the technology ahead of a prospective patent filing and licensing process, the processing methods, conditions and analytical detail for the CNTF fabrics are confidential and are not disclosed in this announcement.

In parallel, the Company is reporting on the directional heat routing potential of CNTF. Unlike copper and aluminium, which conduct heat equally in every direction, single CNTF is intrinsically anisotropic and conducts heat preferentially along the fibre axis. Because the fibre is flexible and textile processable, this anisotropy can be built into the structure through 3D knitting, braiding and weaving, allowing heat to be steered along engineered pathways rather than diffused. Characterisation of the in plane to cross plane behaviour is underway with the Rice University research team.

COMMENTARY

Rocco Tassone, Interim CEO

> *"Our Pure Thermal Management strategy continues to convert laboratory science into a defensible commercial position. Independent peer review confirms our selected carbon nanotube fibre textiles can move large amounts of heat with a small temperature difference, and our partnership with Rice has now manufactured these fabrics in house. Copper and aluminium spread heat in every direction; they cannot send it where it needs to go. CNTF can, because it conducts heat along its own axis and can be knitted and braided into three dimensional form.* ***Put simply we can get to places that metals cannot, which opens up a significant market opportunity****. We are deliberately holding the processing detail confidential while we advance our patent position. The value of this technology lies in owning the method, not merely describing it."*
>
> **— Rocco Tassone, CEO** Pure Resources Limited

DETAIL

Strategic Significance

Convection heat transfer to flowing air is an essential aspect of thermal management for electronics, data centres and wearable devices. Research published by the Rice University team in the journal Small[1] shows that fabrics made from CNTF enable high surface areas and high convective heat transfer coefficients, moving large amounts of heat with a small temperature difference. These proven advantages of CNTF textiles for heat transfer applications provide the basis for the ongoing Pure Thermal Management partnership with Rice, which is focused on designing and fabricating advanced CNTF textiles for data centre thermal management applications.

- The 2026 journal article, "High specific power loading of carbon nanotube fibre devices for gas heating", describes how the tensile strength and impact resistance of CNTF enable manufacture of textiles with high specific surface areas.
- CNTF yarns are flexible and amenable to knitting and weaving processes, unlike traditionally brittle carbon fibre or graphitic fibre, and their high thermal conductivity enables efficient heat spreading within the fabric.
- Thermal characterisation, including electrothermal measurements and infrared imaging, quantifies the advantages of heat spreading using high thermal conductivity CNTF yarns.

Directional Heat Routing: CNTF vs Copper and Aluminium

Thermal anisotropy is the directional dependence of a material's thermal conductivity. It determines whether heat can be guided along a chosen path or only allowed to diffuse. Copper and aluminium have set the reference standard for industrial and electronics cooling for over five decades, but both are isotropic: their conductivity is the same in every direction and heat cannot be preferentially directed. Single CNTF is a strongly anisotropic conductor, introducing engineering properties the metals intrinsically cannot provide.

- Directional conduction: CNTF conducts heat preferentially along the aligned fibre axis, substantially more efficiently than across it. Copper and aluminium conduct equally in all directions and offer no comparable directional advantage.
- Heat routing by design: anisotropy allows heat to be channelled along engineered pathways, from a concentrated hotspot to a rejection surface, rather than diffusing uniformly through the bulk. This converts the heat sink from a passive spreader into a directional thermal circuit.
- Form factor: because CNTF is flexible and textile processable, fibre orientation can be designed into the structure through 3D knitting, braiding and weaving. High conductivity pathways can be placed exactly where heat must travel, an architecture impossible to replicate in machined copper or extruded aluminium.

[1] *https://onlinelibrary.wiley.com/doi/10.1002/smll.202513355*

The relevance of anisotropy grows as electronics become denser. Modern AI accelerators and high power defence electronics dissipate hundreds of watts from die areas under 10 square centimetres, and the binding constraint is increasingly not the total quantity of heat but the difficulty of extracting it from a confined hotspot and moving it along a specific path to where it can be rejected. An isotropic metal spreader works against this geometry; an anisotropic, textile formed conductor works with it.

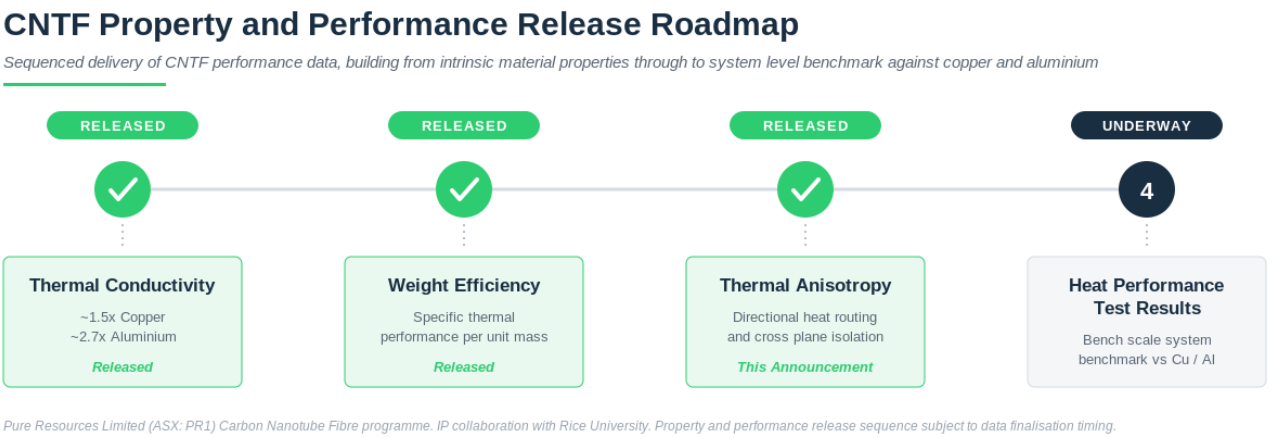

Figure 1: CNTF Property and Performance Release Education Roadmap.

Programme Engagement and Next Steps

The Pure Thermal Management programme now moves to expand and optimise the demonstrated performance while advancing the Company's intellectual property and commercial position. Planned activities include expanded testwork by Rice University to quantify and optimise convective heat transfer and to characterise the in plane to cross plane behaviour of CNTF, advancing the Company's intellectual property position including a prospective patent filing, and progressing the commercialisation and licensing pathway for the technology. The expanded testwork will not increase the allocated budget of the Research and Development Collaboration Agreement announced 31 March 2026.

In parallel, the Company is pursuing United States Government funding across the United States Department of Defense and the United States Department of Energy, in coordination with the Rice University research team, and has commenced early engagement with prospective end users across hyperscale data centre infrastructure, defence prime contracting and advanced electronics manufacturing. The directional heat routing capability described in this release is directly relevant to those pathways, where confined hotspots and three dimensional packaging are the binding thermal constraints.

The programme sits within the Company's broader Defence Materials Platform Strategy, anchored by the 100% owned Garnet Hills Project in Western Australia, alongside the executed Strategic Partnership Projects Agreement with Oak Ridge National Laboratory and the NAVSEA aligned defence consumables garnet pathway. The Company will continue to update the market on programme milestones as material progress is achieved.

AUTHORISATION

Approval & Release

This announcement is approved for release by the Board of Pure Resources Limited.

Rocco Tassone
Chief Executive Officer
Pure Resources Limited

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DISCLAIMER

Forward-Looking Statements

*This announcement contains forward-looking statements concerning Pure Resources Limited (ASX: PR1) (**"Pure"** or the **"Company"**) and its current expectations, intentions and projections regarding the Company's future operating and financial performance, business plans, projects, strategies, prospects and the markets in which it operates. Forward-looking statements can generally be identified by the use of words such as "anticipate", "believe", "expect", "intend", "may", "plan", "project", "potential", "estimate", "target", "forecast", "guidance", "should", "will" and similar expressions.*

ABOUT

Pure Resources Limited (ASX: PR1) is an ASX-listed advanced materials and critical minerals company pursuing an integrated mine-to-market strategy — from 100% ownership of an upstream graphite and garnet asset in Western Australia, through a US DoE Strategic Partnership for heavy rare earths, to a funded downstream R&D collaboration with Rice University (Houston) in high-performance carbon nanotube fibre.

THE MATERIAL OF THE INTELLIGENCE AGE

"CNTFs are not just an incremental improvement — they represent a step change in materials capability. Through advanced materials science, they unlock lighter, stronger and more conductive systems that redefine performance across defence, energy and advanced manufacturing. This is not evolution; it is a fundamental revolution in what materials can do."

01 UPSTREAM

Garnet Hills Project
Graphite & Garnet

The Company's 100% owned **Garnet Hills Project** provides upstream exposure to graphite and garnet under a granted mining lease in Western Australia.

02 STRATEGIC PARTNERSHIP

Oak Ridge National Laboratory
HREEs & Yttrium

The deposit has attracted a **Strategic Partnership Projects Agreement with the US Department of Energy (DoE) Oak Ridge National Laboratory**, targeting the recovery of **Heavy Rare Earth Elements and Yttrium** for United States critical materials supply chains.

03 IP COLLABORATION

Rice University
Carbon Nanotube Fibre (CNTF)

Pure is executing a downstream strategy anchored by a funded R&D collaboration with **Rice University**, focused on **Carbon Nanotube Fibre thermal management technology** for AI data centre infrastructure and defence applications.

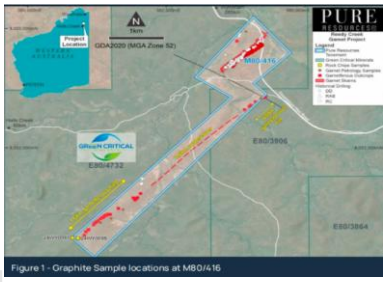

Fig. 1 Graphite sample locations at M80/416, Reedy Creek Garnet Project (GDA2020, MGA Zone 52).

• WESTERN AUSTRALIA · GRANTED MINING LEASE

Fig. 2 US DoE Oak Ridge National Laboratory — HREE & Yttrium recovery programme.

• US DEPARTMENT OF ENERGY · ORNL PARTNERSHIP

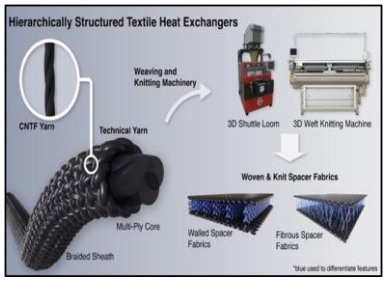

Fig. 3 Hierarchically structured textile heat exchangers — CNTF yarn to woven & knit spacer fabrics.

• RICE UNIVERSITY · FUNDED R&D COLLABORATION