Archer Materials Limited (ACN: 123 993 233)
Ground Floor, 28 Greenhill Road, SA 5034

ASX Announcement (ASX: **AXE**) 25 March 2021

Corporate presentation

Archer Materials Limited ("Archer", the "Company", "ASX: **AXE**") is pleased to provide the attached presentation for the purpose of outlining the Company's strategic priorities, its principal activities and significant recent developments.

Archer CEO, Dr Mohammad Choucair, will be presenting the attached Corporate Presentation at a Company event, on-site where the Company builds and develops prototypes of its semiconductor devices, namely its ^{12}CQ quantum computing chip and A1 Biochip lab-on-a-chip technologies.

About Archer

A materials technology company developing innovative deep tech in quantum computing, biotechnology, and reliable energy. The Company has strong intellectual property, world-class in-house expertise, a unique materials inventory, and access to Tier 1 technology development infrastructure.

The Board of Archer authorised this announcement to be given to ASX.

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Executive Chairman

Dr Mohammad Choucair
Chief Executive Officer

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For more information about Archer's activities, please visit our:

Website:
https://archerx.com.au/

Twitter:
https://twitter.com/archerxau?lang=en

YouTube:
https://bit.ly/2UKBBmG

Sign up to our Newsletter:
http://eepurl.com/dKosXI

Research & Prototype Foundry Archer operates in,
Sydney, Australia.

ARCHER IS ONE OF ONLY A FEW COMPANIES IN THE WORLD BUILDING A QUANTUM COMPUTING PROCESSOR

/ Company Overview

Archer is a technology company. The Company's core business is in developing and commercialising innovative deep tech, including quantum computing and biotech. Archer is long-term value driven and creates maximum value by†:

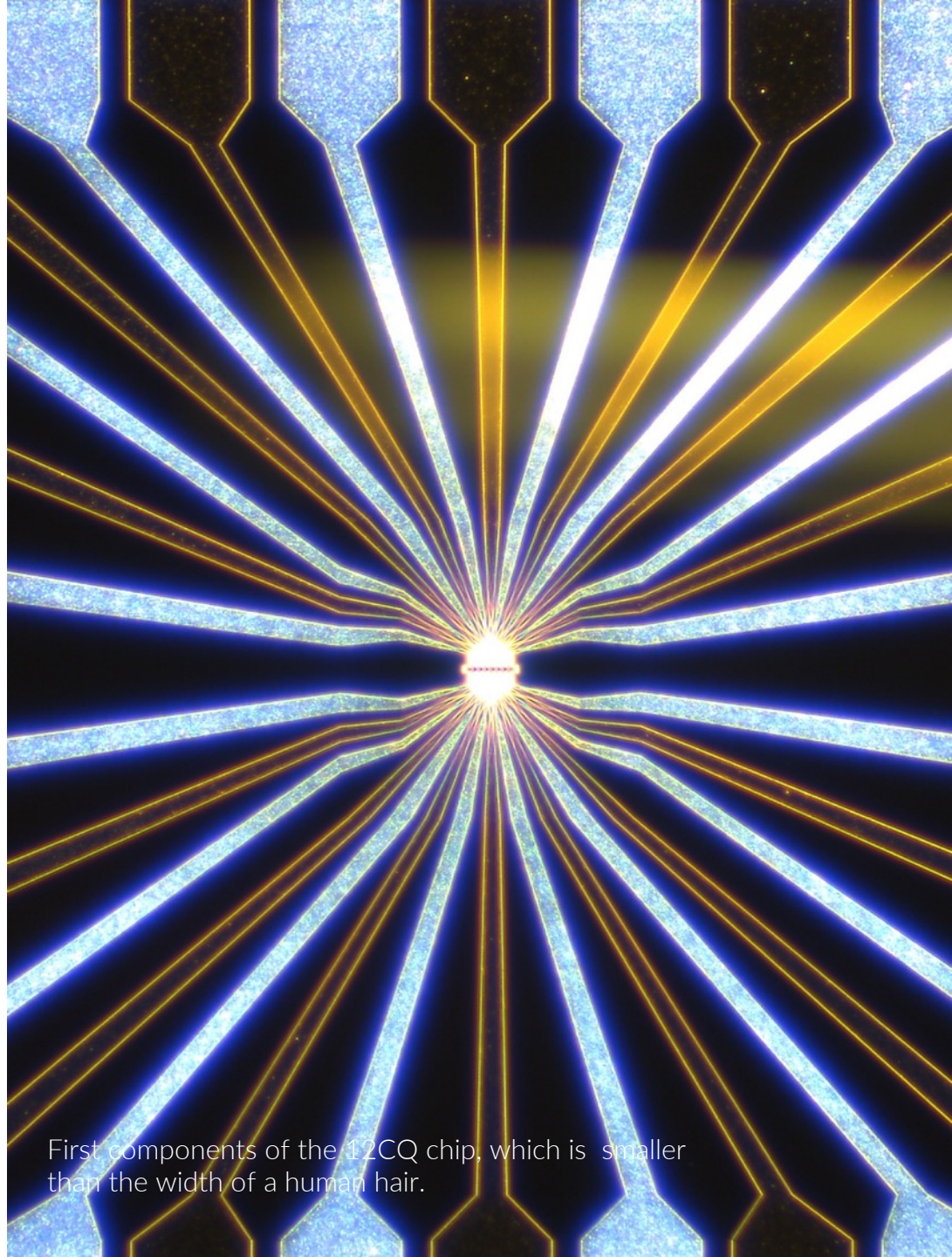
+ Progressing its world-first technology development, including its 12CQ® quantum computing chip and A1 Biochip™.

+ Utilising Tier 1 tech development infrastructure and facilities, R&D, people and IP, to support pre-market development.

+ Protecting key intellectual property assets (*e.g.* patents and patent applications) with global competitive advantages.

+ Applying a business model that values partnerships, as a key player‡ in global networks coordinated by large companies.

† https://www.bcg.com/en-au/publications/2019/dawn-deep-tech-ecosystem
‡ https://www.nature.com/articles/s42254-020-00247-5; also https://www.ibm.com/quantum-computing/network/members/



First components of the 12CQ chip, which is smaller than the width of a human hair.

Ticker

AXE

Australian Securities Exchange listing.

Sector

Materials

Market Capitalisation

$207m

As of 24 Mar 2021

Peers

IonQ, Rigetti, Applied Materials

Chosen by similar industry, tech, or activity

Cash at Bank

$6.93m

No corporate debt. As of 31 Dec 2020

Share Price

$0.92

As of 24 Mar 2021

Key Activities

Quantum computing, graphene, semiconductor devices, chips

Shareholder Return

+534%

12 months as of 24 Mar 2021

/ Experienced Board and Management

Executive Chairman
Greg English
LLB, BE (Mining)

Non-Executive Director
Alice McCleary
DUniv, BEc FCA FTIA FAICD

Non-Executive Director
Kenneth Williams
BEc (Hons), M APP FIN, FAICD

Chief Executive Officer
Mohammad Choucair
PhD, FRACI FRSN GAICD

Chief Financial Officer & Company Secretary
Damien Connor
CA GAICD AGIA B.Com

QUANTUM COMPUTING IS REVOLUTIONARY DEEP-TECH

/ Classical Computing vs. Quantum Computing

$|00\rangle$ **Classical bit**
is processable information in a binary 0 or 1 state *e.g.* static, electronic signal

$|01\rangle$ **Semiconductor materials**
are the basis of modern tech, having now reached their atomic limits *e.g.* silicon, transistors

$|10\rangle$ **Central processing unit (CPU)**
is the device inside computers & phones responsible for performance and function *i.e* processor chip

$|11\rangle$ **Modern computing**
in smartphones, tablets, & PCs is converging, needing more powerful CPU's *e.g.* functionality

01101100 01110011 00100000
01001101 01100001 01110100 01100101 01110010
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$$|\psi\rangle = a_\psi|\uparrow_z\rangle + b_\psi|\downarrow_z\rangle$$

$$\sum_{x\in\{0,\ldots,Q-1\};\ f(x)=z} \omega^{xy} = \sum_{b=0}^{m-1} \omega^{(x_0+rb)y} = \omega^{x_0 y} \sum_{b=0}^{m-1} \omega^{rby}$$

$$Pr(|y,z\rangle) = \left|\frac{1}{Q} \sum_{x\in\{0,\ldots,Q-1\};\ f(x)=z} \omega^{xy}\right|^2 = \frac{1}{Q^2}\left|\sum_{b=0}^{m-1} \omega^{(x_0+rb)y}\right|^2 = \frac{1}{Q^2}|\omega^{x_0 y}|^2\left|\sum_{b=0}^{m-1} \omega^{bry}\right|^2 = \frac{1}{Q^2}\left|\sum_{b=0}^{m-1} \omega^{bry}\right|^2 = \frac{1}{Q^2}\frac{\omega^{mry}-1}{\omega^{ry}-1}$$

$|\psi\rangle$ **Quantum computing qubit**
is processable information in a quantum 'superposition' state *e.g.* electron spin, light, that can be controlled for long times

$|\phi\rangle$ **Qubit materials**
are the physical basis of quantum computing tech *e.g.* silicon, diamond, limiting operation & temperatures

$|\downarrow_x\rangle$ **Qubit processor unit (QPU)**
is the most crucial hardware device and brain of a quantum computer, *e.g.* 12CQ, that require fabrication and integration

$|\uparrow_x\rangle$ **Quantum computers**
represent the next generation of powerful computing & are under development, with limited ownership & use

Dr Mohammad Choucair (left) and Dr Martin Fuechsle (right).

/ Innovation and Leadership

Archer's ^{12}CQ development is led by:

Dr Mohammad Choucair *FRACI FRSN GAICD*. Archer CEO since Dec 2017. PhD in Chemistry (UNSW). Alumni of AGSM UNSW Business School. Former World Economic Forum Global Councillor. Inventor of the ^{12}CQ quantum computing technology. RACI Cornforth Medallist for the most outstanding Chemistry PhD in Australia. Honorary Fellow of the University of Sydney.

Dr Martin Fuechsle. Archer Quantum Technology Manager since Feb 2019. PhD in Physics (UNSW). 10 years experience in building quantum computing devices and technology. AIP Bragg Gold Medallist for the most outstanding Physics PhD in Australia. Inventor of the single-atom transistor. Honorary Associate of the University of Sydney.

/ Quantum Computing at the Edge

Archer is in the pre-market development stage of building an operational quantum computing qubit processor chip (^{12}CQ®):

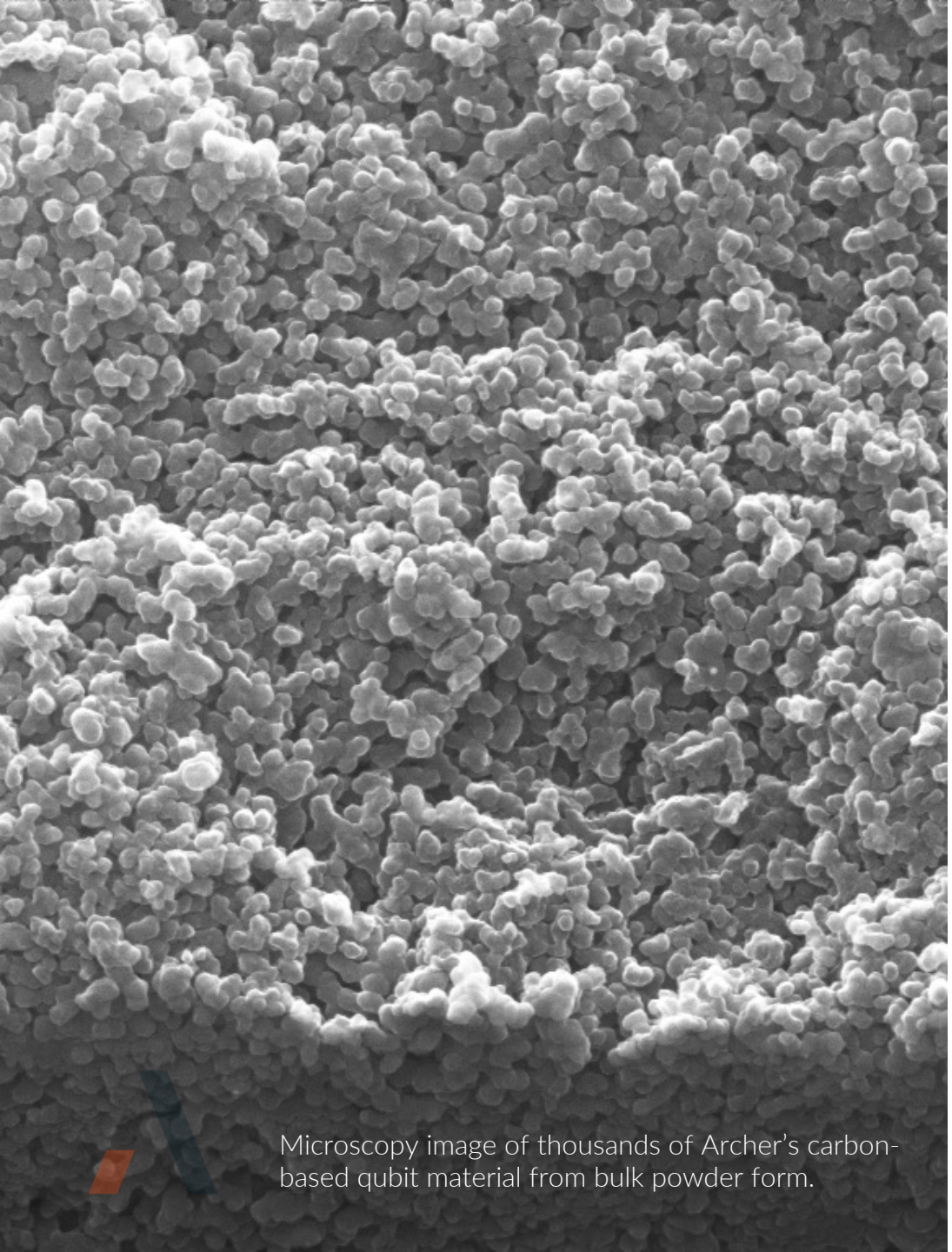
+ Archer is currently building and testing the qubit control components required to successfully fabricate working prototypes of the ^{12}CQ® chip.

+ The ^{12}CQ® chip would allow for quantum computing onboard mobile devices for speed ups and increased power in AI, Big Data, and Fintech applications.

+ ^{12}CQ® would not require dilution refrigeration or other expensive and complex infrastructure that currently limits the development of quantum computing powered devices.

Archer staff and affiliates working in semiconductor chip foundry facilities.

ƒ https://www.nature.com/articles/ncomms12232



Microscopy image of thousands of Archer's carbon-based qubit material from bulk powder form.

/ Unique Technological Advantage

Electron-spin qubits in Archer's carbon nanomaterial are one of the most promising solutions to the widespread use of quantum computing powered mobile devices:

+ Archer uses a qubit material with the proven potential to enable chip operation at room-temperature *and* integration onboard modern electronic devices[ƒ]:
+ Qubit material is easily produced, is low cost, with workable dimensions for building devices, allowing for rapid speed of execution in device development.
+ Advantageous to other qubit systems, which require low temperatures, high/low pressures, well-defined crystals, atomic manipulation, photonics, lasers, or metals to currently operate and scale.

[ƒ] https://www.nature.com/articles/ncomms12232

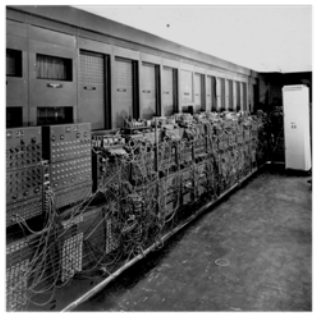
/ Era of Quantum Computing

According to BCG† and Goldman Sachs‡, value for investors in the multi-billion dollar quantum computing economy is expected to increase rapidly as the commercial viability of quantum hardware matures:

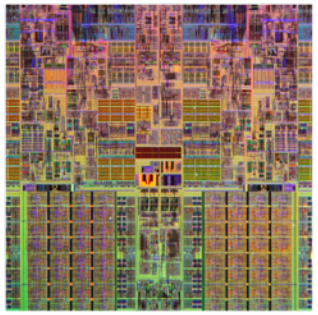
+ The CSIRO§ reported Australian quantum tech could create $4 billion revenue and 16,000 new jobs by 2040.
+ The US National Quantum Initiative Act was signed into US law on Dec 21, 2018*.
+ The US is strengthening investments in quantum tech and preparing a quantum-ready workforce.
+ 100+ companies in the UK active in quantum computing & over £1 billion ($1.8 billion) of investment expected**.

† https://www.bcg.com/en-au/publications/2019/quantum-computers-create-value-when.aspx
‡ http://www.goldmansachs.com/our-thinking/pages/toshiya-hari-quantum-computing.html
§ https://www.csiro.au/en/Showcase/quantum/
* https://www.quantum.gov/
** https://uknqt.epsrc.ac.uk/

Hallmarks of the computing industry.



ENIAC. Copyright Everett Historical Collection.



Die-shot of Intel Core i7 CPU. Copyright Intel Corp.

D-Wave system. Copyright D-Wave Systems Inc. (Media Resources)

1946. Electronic Numerical Integrator And Computer (ENIAC)

1947. Transistor demonstrated to replace the vacuum tube triode

1958. First ever integrated circuit built by Jack Kilby, using Ge and Al

1968. Intel founded by Gordon Moore **(PhD Chemistry)** and Robert Noyce **(PhD Physics)**

1975. Microsoft founded by Bill Gates and Paul Allen

1976. Apple Computer Company founded by Steve Jobs, Steve Wozniak and Ronald Wayne

1980s. The start of the personal computer (PC) era and home gaming consoles

1990s. The internet is invented and portable devices offer unprecedented connectivity

2010+. Quantum computing systems and prototype processor chips emerge

2019. Billions of transistor structures inside a CPU in mobile devices

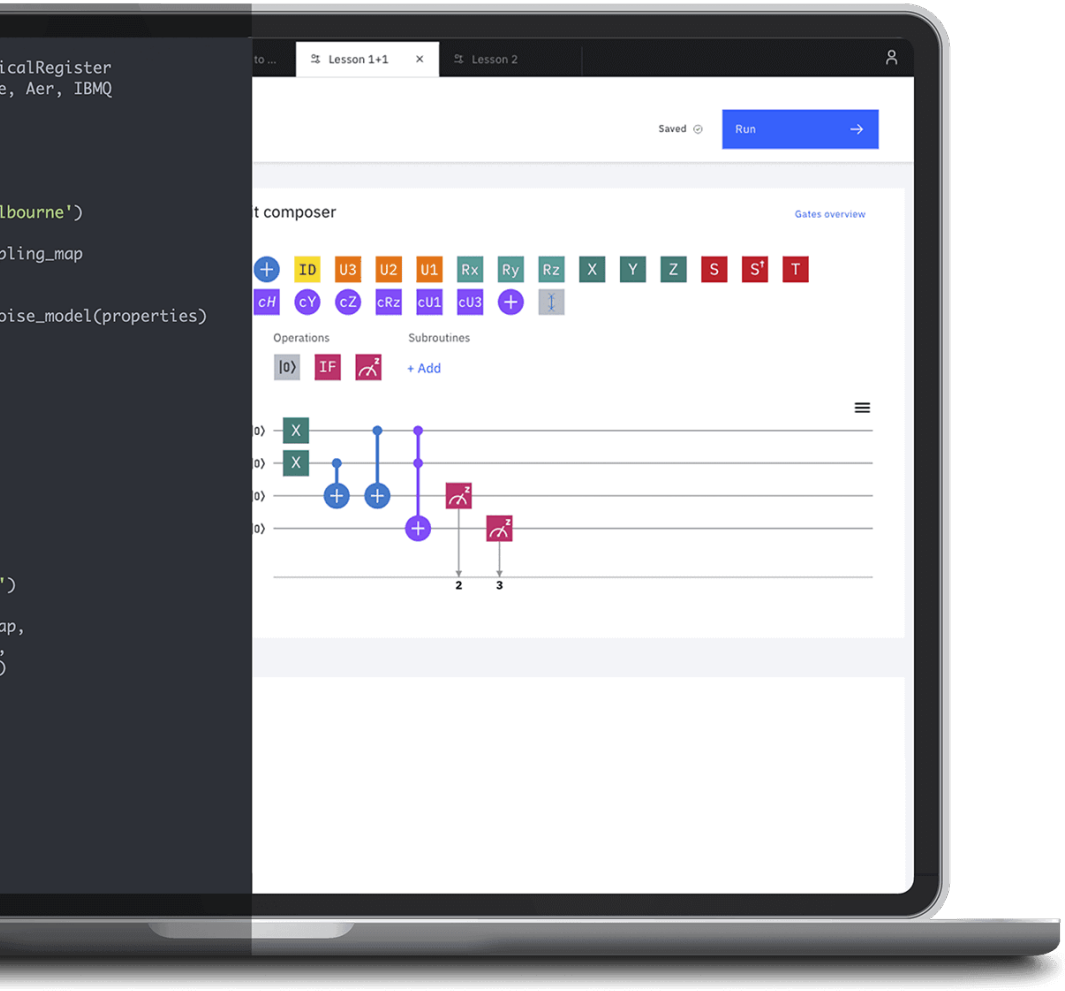
/ The World is Data and Mobile Centric

According to BCG†, a growing number of financial institutions are positioning themselves for a quantum future:

+ US$70 billion ($95 billion) opportunity for additional income for banks and other financial-services companies.
+ Quantum computing can solve problems like options pricing and cash management in ATM networks.
+ BBVA, CaixaBank, and JPMorgan Chase have announced or publicly discussed experiments in quantum computing.
+ Financial institutions are building their quantum capabilities and exploring partnerships in the quantum ecosystem.

† https://www.bcg.com/en-au/publications/2020/how-financial-institutions-can-utilize-quantum-computing

Qubit control devices built for the [12]CQ chip qubit measurements and characterisation.



IBM's Qiskit interface showing a quantum computing gate compiler. Image sourced from IBM website.

/ Global Partnerships

Archer entered into an agreement with IBM to collaborate on the advancement of quantum computing, supporting:

+ Archer's plans to use Qiskit as the software stack for ^{12}CQ® processors and to participate in the global IBM Q Network†.

+ The Company's access to the IBM Quantum Computation Center, which includes the most advanced quantum computers available to explore practical applications.

+ The demonstration of Qiskit's flexibility, integrating with different quantum hardware (*e.g.* ^{12}CQ®) to accomplish the goal of enabling *practical* quantum computing applications.

† https://archerx.com.au//src/uploads/2020/05/20200505_Quantum-computing-agreement-with-IBM-ASX-Release.pdf

/ Unlocking Commercialisation

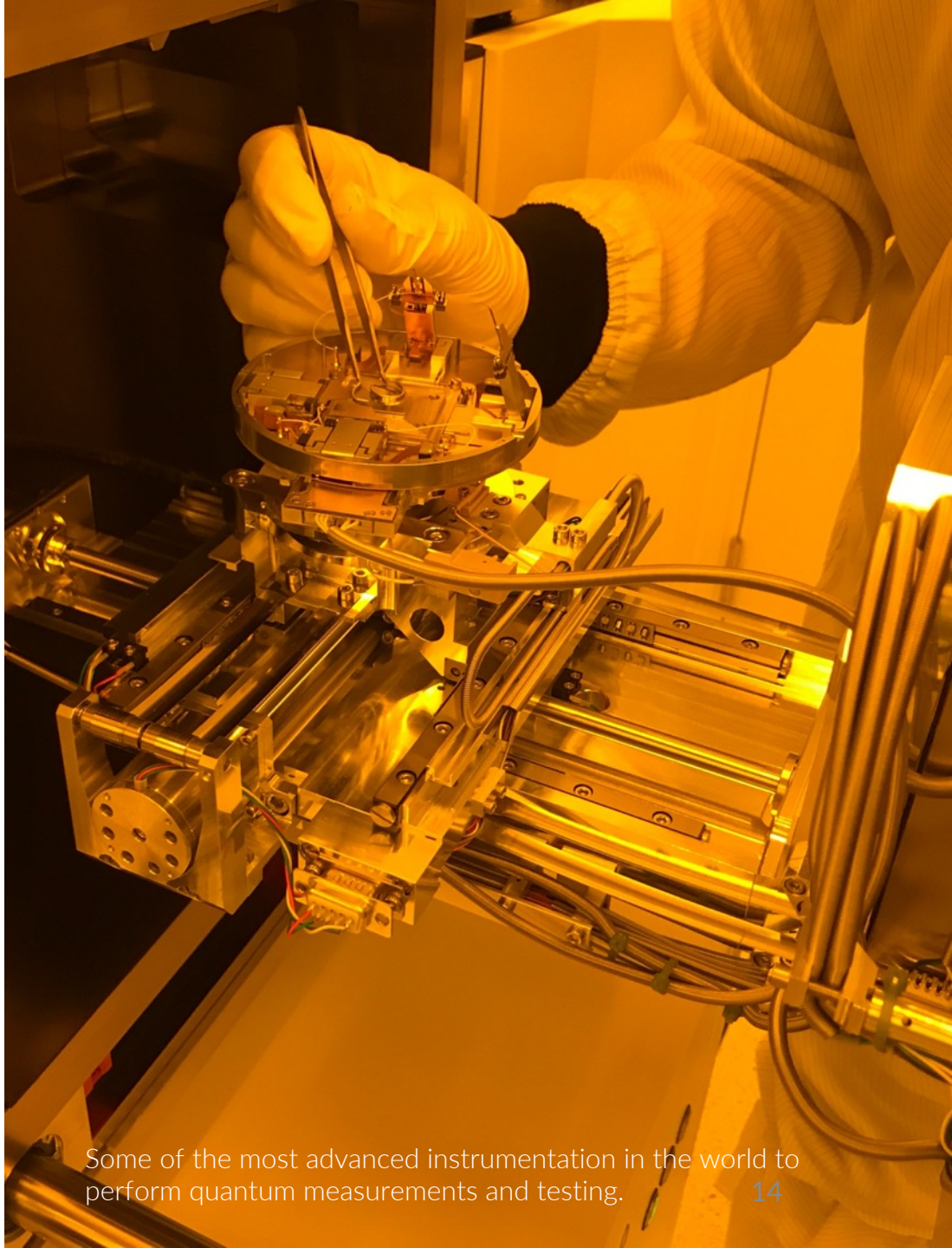
Archer has made rapid, internationally recognised progress building the ^{12}CQ® chip over the past year, towards a viable qubit processor chip technology:

+ Archer has commercial access to prototyping chip foundries (Australia & Switzerland), and established collaborative partnerships (85+ personnel) to build prototypes of the ^{12}CQ® qubit processor chip.

+ Patent granted in Japan[ƒ] and international patent applications protecting Archer's global competitive advantage are currently advancing in the EU, US, Australia, China, Hong Kong, and South Korea.

+ Single and few-qubits have been nanofabricated into arrays; single qubit component conductivity completed; and qubit control devices recently built: key early-stage quantum computing chip development success factors.

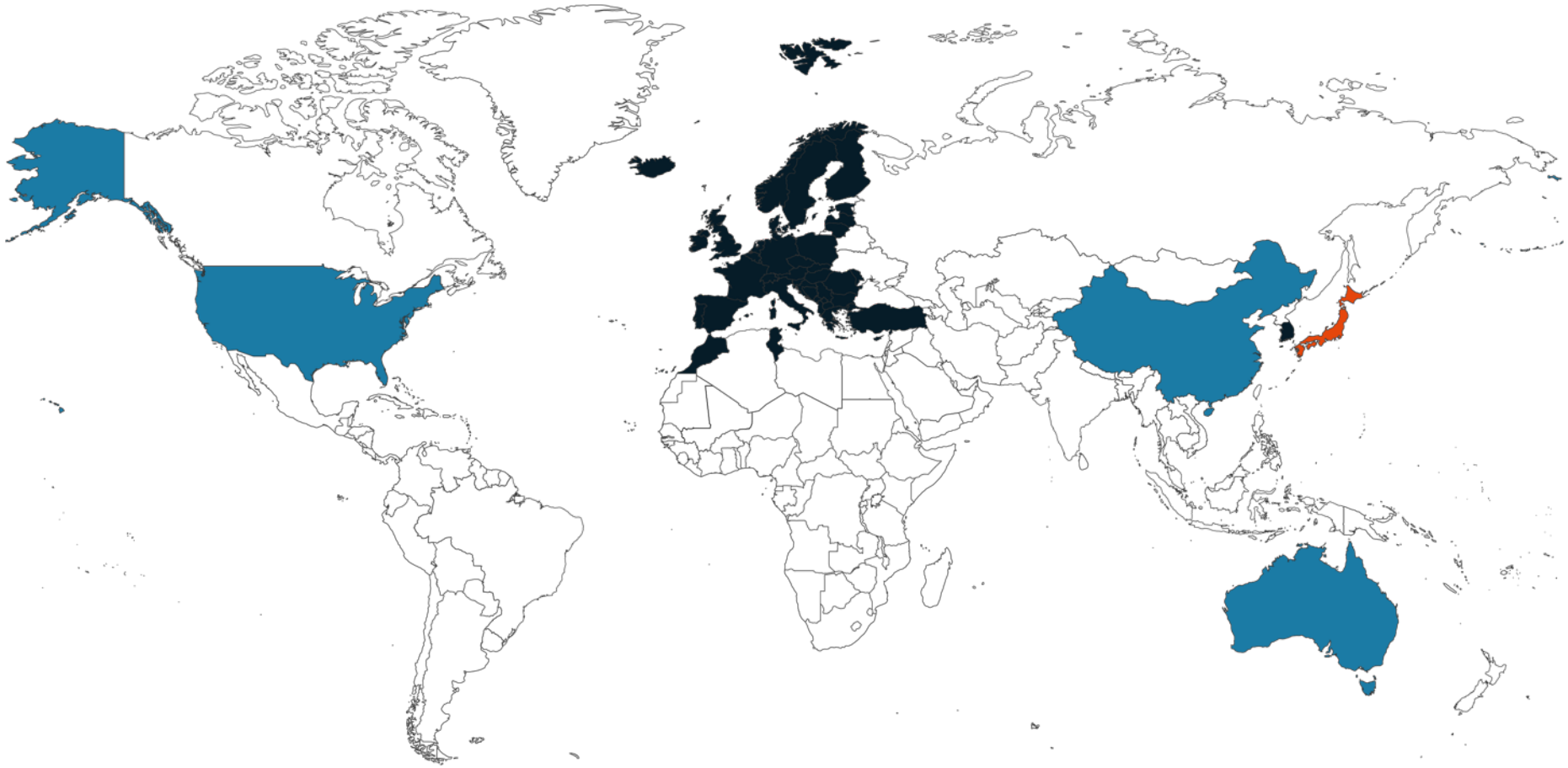
ƒ Patent No. 6809670



Some of the most advanced instrumentation in the world to perform quantum measurements and testing.

WELL PROTECTED IP IS CHARACTERISTIC OF SUCCESSFUL DEEP TECHS

/ Global Competitive Advantage



Patent Portfolio
A quantum electronic device
(1 granted, 6 applications)

Granted
- Japan (JP)

Substantial Examination
- Republic of Korea (KR)
- European Patent (EP)

First Office Action
- Australia (AU)
- United States of America (US)
- China (CN)

Pending Examination
- Hong Kong (HK)

As of 1 March 2021.

ARCHER IS BUILDING ADVANCED SEMICONDUCTOR DEVICES

/ Lab-on-a-Chip Diagnostics

Biosensors as IVD Devices
Some of the most successful biosensors include tests for pregnancy and blood glucose

IVD Specimens
Taken from the body & used for testing directly (on-device) or in a lab

Patient Wait Times
Biosensors can reduce patient wait times, bypassing traditional IVD infrastructure

Market & Paradigm Shift
Biosensors decentralise IVDs closer to patients, helping improve disease management for individuals

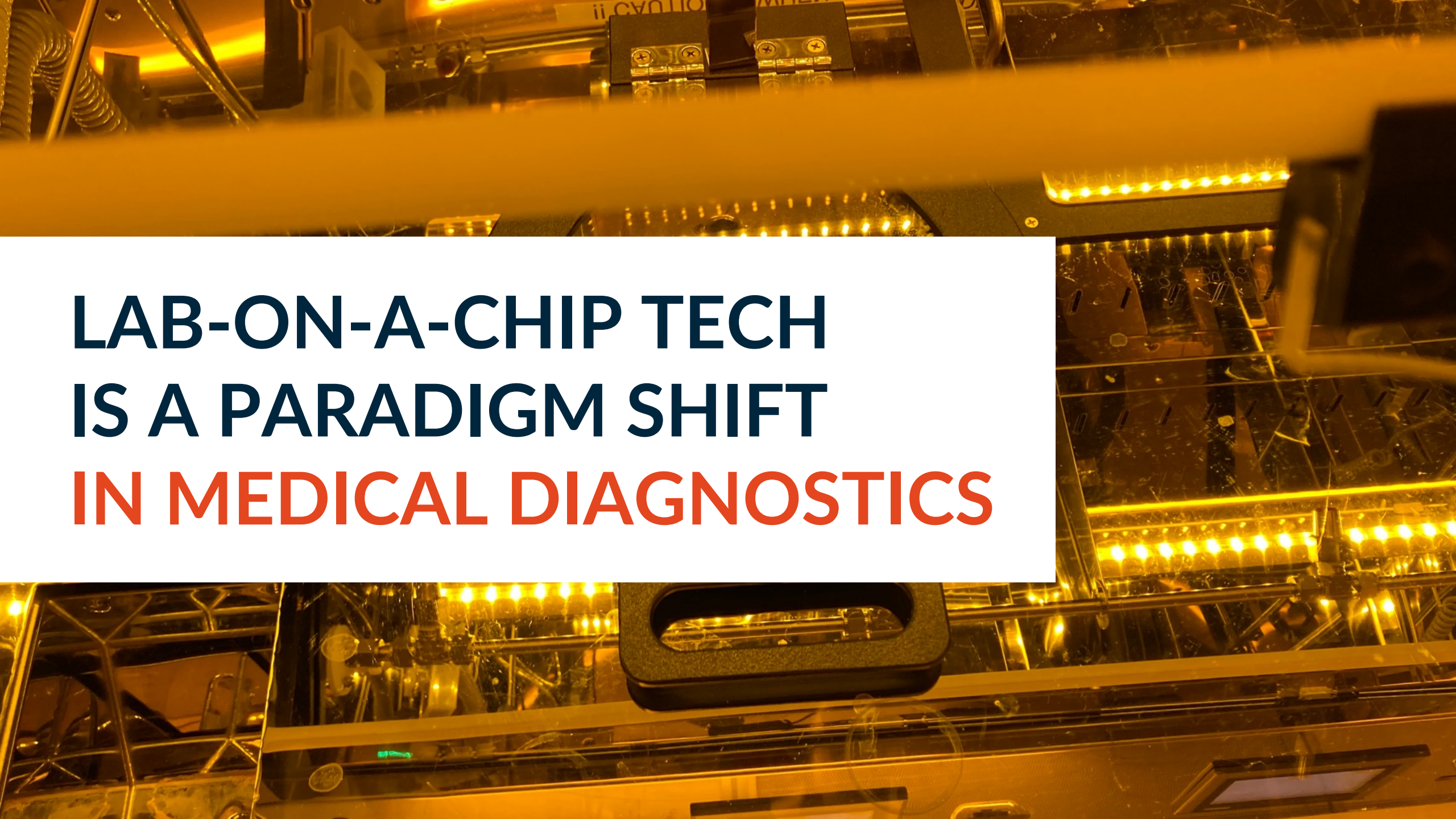
Biosensor Performance
Linked to materials' optical, electrical, magnetic, and/or chemical properties

Graphene Biosensors
Can provide rapid, highly sensitive and low-cost testing for IVDs

Limited Materials
Few materials available to directly read out molecular-level based bioactivity

Biochemically Ultrasensitive
Graphene is electronically active & biocompatible, disrupting non-portable optical IVDs

*More information on Australian regulations related to IVDs: https://www.tga.gov.au/medical-devices-ivds



LAB-ON-A-CHIP TECH IS A PARADIGM SHIFT IN MEDICAL DIAGNOSTICS

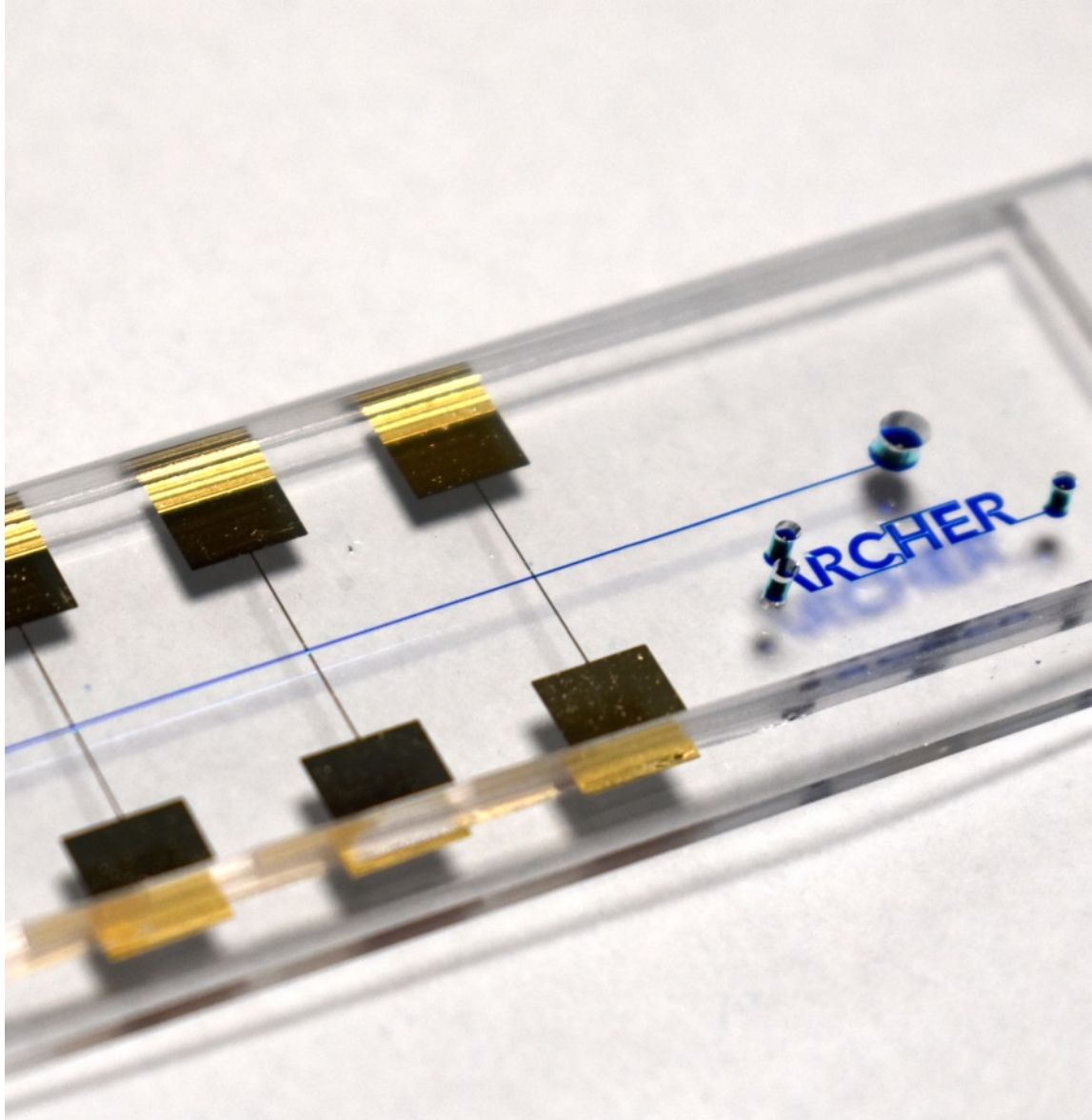
/ Building a Biochip

Archer is in the early stages of building a graphene based lab-on-a-chip device (A1 Biochip™):

+ Archer owns IP to commercialise the only reported graphene materials capable of stable and robust selective hierarchal chemistries compatible to the single molecule level[ƒ].

+ Microfluidic channels & sensing areas reduced to few-hundred nanometer size, sample volumes as low as 3 uL, and biologically relevant molecules a few atoms from the surface accurately detected[†].

+ The A1 Biochip™ would allow for the possibility of miniaturising medical lab tests onto an integrated circuit, a single chip, to make complex detection of disease safer and more reliable.



Archer prototyping components of its A1 Biochip™ with microfluidic channels containing blue dye leading to microfabricated sensing areas.

ƒ https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2020163921
† https://onlinelibrary.wiley.com/doi/abs/10.1002/chem.201404309
https://pubs.acs.org/doi/10.1021/nl202866q

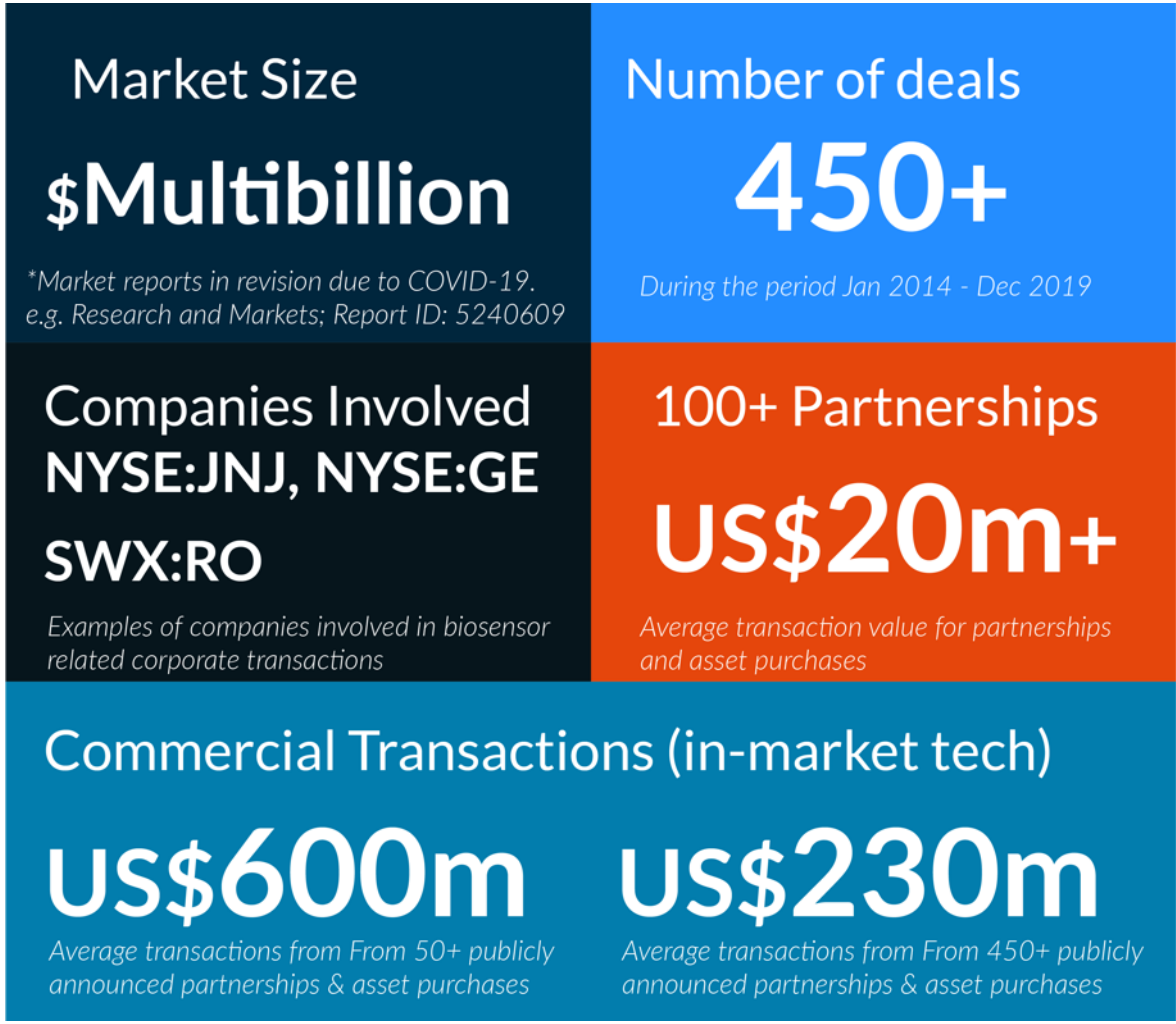
/ Significant Socio-economic Impacts

The A1 Biochip™ end-use is initially aimed at the complex detection of diseases affecting the respiratory system, as they remain one of the world's most deadly communicable diseases†:

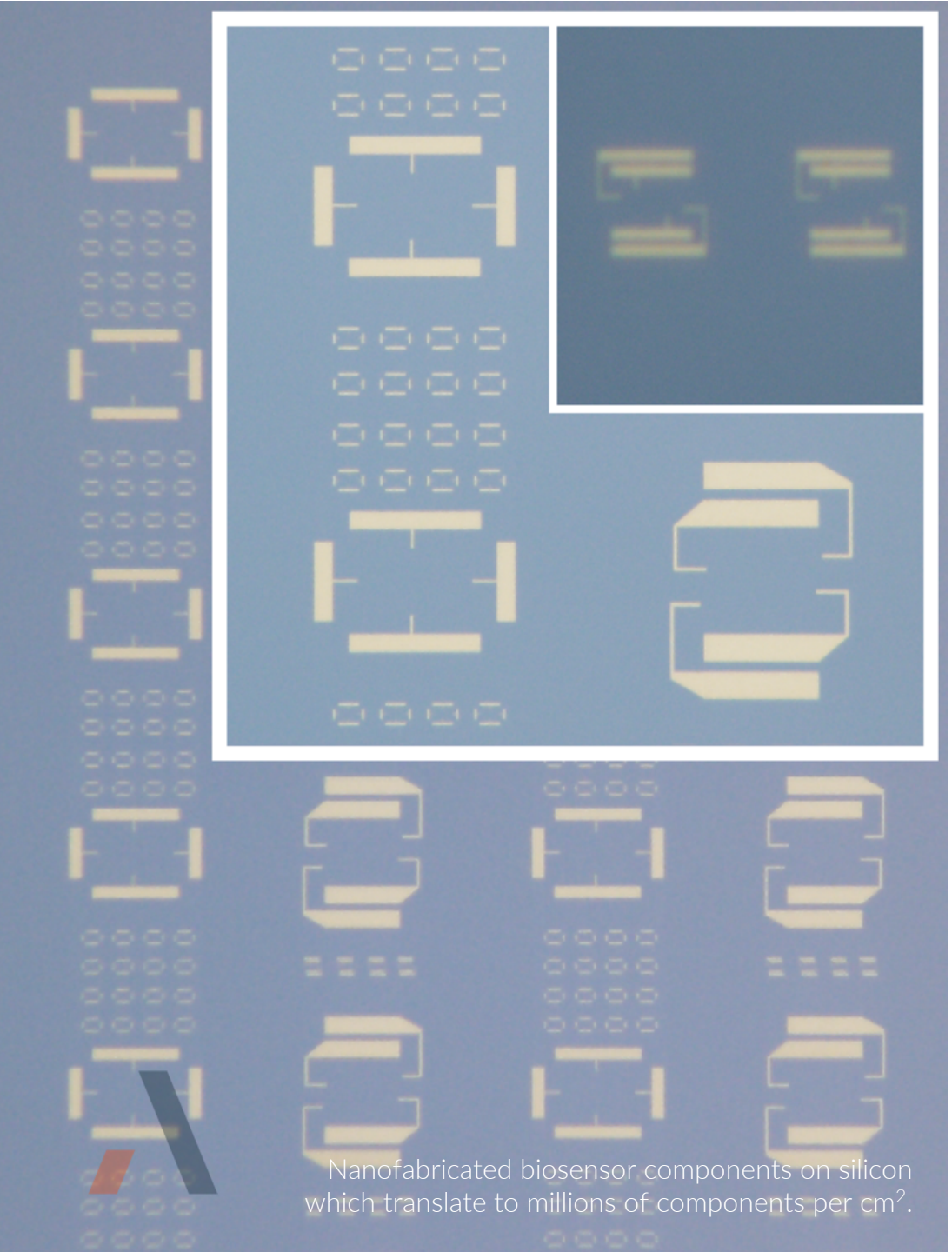
+ Archer works with a German Biotech partner†† to determine potential candidate biomolecules relevant to in-demand disease diagnostic tests, as part of the commercial development of Archer's A1 Biochip™.

+ Archer's sophisticated manufacturing of its technology at world-class facilities, directly aligns to National strategic manufacturing priorities§, and facilitates its scale-up in the global semiconductor industry‡.

† https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death
†† https://archerx.com.au/src/uploads/2018/09/20180927_MTA-signed-with-German-biotech-ASX-Release.pdf
§https://www.industry.gov.au/data-and-publications/medical-products-national-manufacturing-priority-road-map/road-map-at-a-glance
‡https://www.chiefscientist.nsw.gov.au/independent-reports/australian-semiconductor-sector-study
Note: The World Health Organization provides a guide to aid the selection of medical diagnostic tests: https://www.who.int/bulletin/volumes/95/9/16-187468/en/



Independent research by Archer advisors: https://archerx.com.au/src/uploads/2020/06/20200611_Progress-towards-graphene-biosensors-for-disease-detection-ASX-Release.pdf



Nanofabricated biosensor components on silicon which translate to millions of components per cm^2.

/ Nanofabrication is a Prerequisite

Archer has made rapid progress over the past 6-12 months towards building the A1 Biochip™, and is now able to miniaturise its biosensing processes to chip-formats, a key barrier to commercialising lab-on-a-chip devices†:

+ Successfully demonstrated fabrication of nanosize biosensor components of ca. 100 nanometer features on silicon wafers, which would enable high volume chip production – required for any future retail applications.

+ Company has used and expanded in-house capability to miniaturise key biosensor components from 1 sensor component per cm^2 to approx. over 1 million sensor components within a 1 cm^2 area.

+ Archer's team includes cross-functional expertise in semiconductor device fabrication, nanotech, advanced materials engineering, and molecular biology, to grow a world-class patent portfolio.

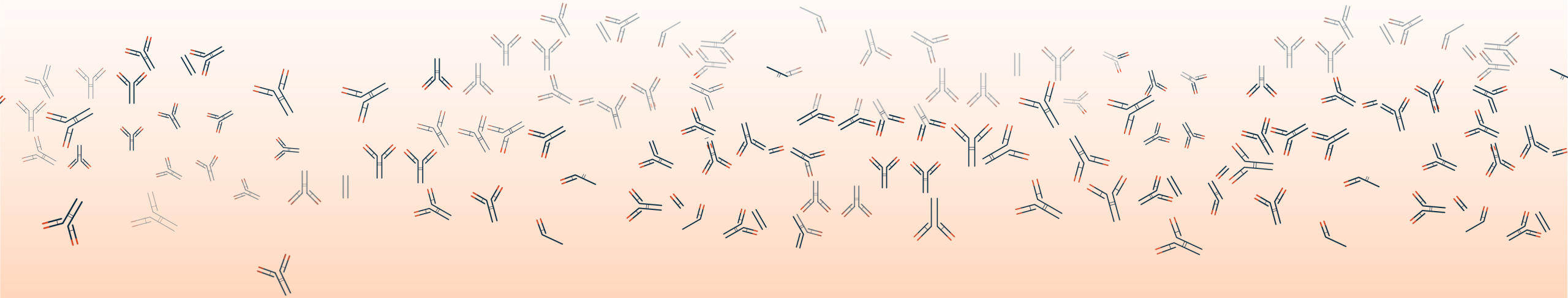
†https://archerx.com.au/src/uploads/2021/03/20210322_Archer-strengthens-biochip-nanofabrication-capabilities-ASX-Release.pdf

/ Graphene Impact on Biotechnology

Materials Biocompatibility
Recognition motifs on graphene in biological media are possible without comprimising function^

Biology Searching Engine
Graphene can simplify the process of targeted DNA & gene detection that currently require DNA amplification*

Desalination Membranes
Molecular-level design approaches to highly-selective and permeable graphene membranes#



Devices for DNA Sequencing
Graphene sequencers have begun to appear which involve DNA passing through nanopores & physisorption**

Tissue Engineering
Graphene has been successfully used to create scaffolds for a range of organs while mimicking in-vo environments***

Antibodies & Aptamers
Graphene-based biosensors can detect a wide range of targets, including cancer molecules^^

^*Nature Commun.*, 9, 1577 (2018)
***Nature Nanotech.*, 11, 127–136 (2016)

**Nature Biomed. Eng.*, 3, 427–437 (2019)
****Int. J. Nanomedicine*, 14, 5753–5783 (2019)

#*npj Clean Water*, 1, 5 (2018)
^^*Sci. Rep.*, 9, 19311 (2019)

/ High-value Graphene Materials

Archer's biochip design principles involve using proprietary graphene-based materials as integrated circuits, to form the key sensing elements in its biochip:

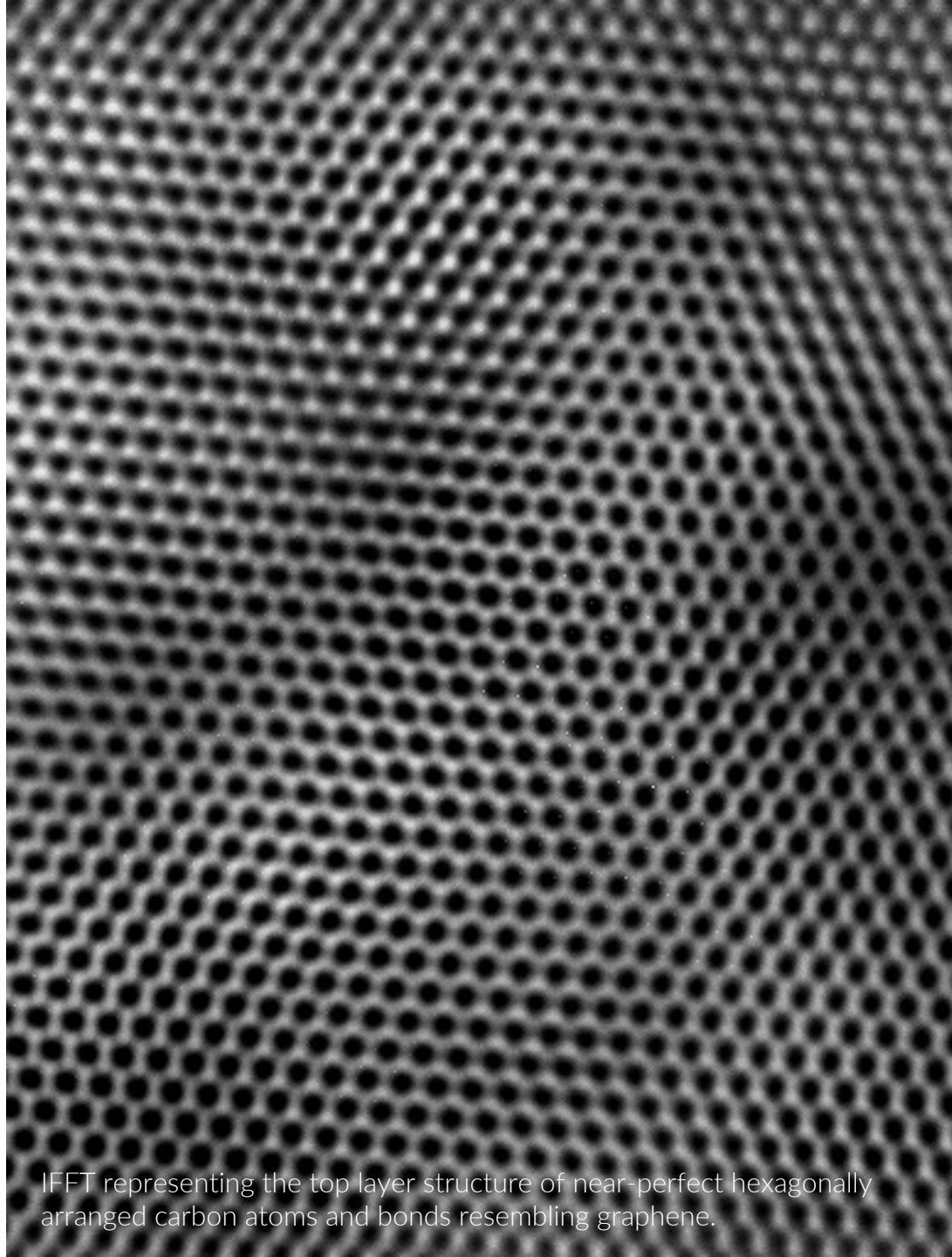
+ Graphene[1] has a combination of exceptional materials' properties that could make it useful *and* valuable[2].

+ Archer can produce graphene from a number of chemical feedstocks, including graphite, alcohols, and gases.

+ The largest technological barriers to commercialising such devices involve high-value advanced manufacturing, *e.g.* the fabrication and integration of graphene materials.

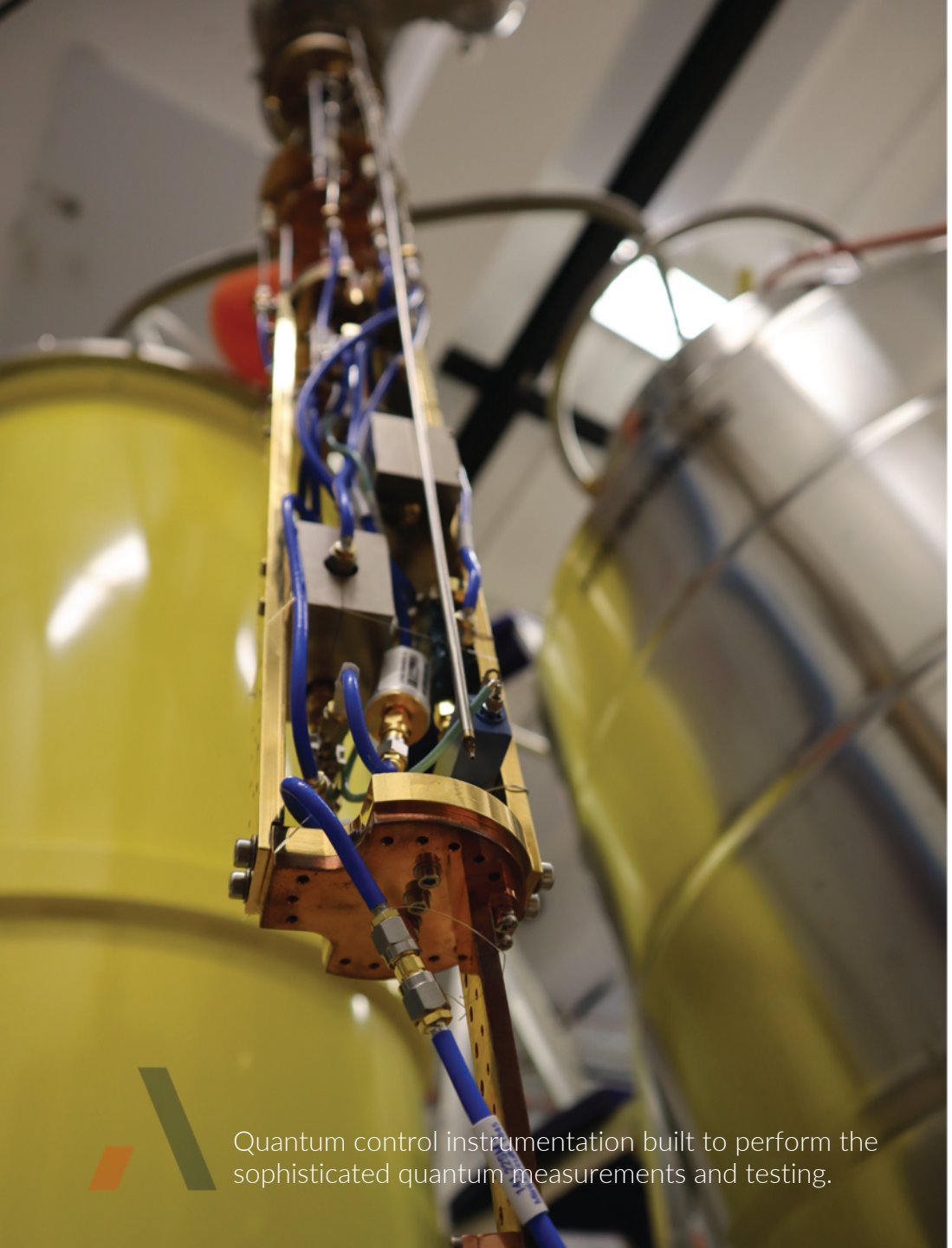
+ During his PhD at UNSW, Archer CEO, Dr Mohammad Choucair, was the first in the world to directly synthesise graphene in bulk-scale quantities; and not use graphite[3].

[1] https://goldbook.iupac.org/terms/view/G02683
[2] https://www.nature.com/articles/nnano.2014.225/
[3] https://www.nature.com/articles/nnano.2008.365



IFFT representing the top layer structure of near-perfect hexagonally arranged carbon atoms and bonds resembling graphene.

THE GLOBAL VALUE CHAIN IN COMMERCIALISING DEEP TECH IS GROWING



Quantum control instrumentation built to perform the sophisticated quantum measurements and testing.

/ Archer's Accelerated Advance

Over the next 12 months key aspects of the Company's strategy involves:

+ Progressing the Company's deep-tech development with a focus on high-value added milestones in the operation of the ^{12}CQ® chip & nanofabrication of the A1 Biochip™.

+ Advancing with international prosecution of patent applications towards granting in Australasia, the EU, and the US for the ^{12}CQ® chip & A1 Biochip™.

+ Exploring commercial opportunities with new and existing partners to develop our processor devices, algorithms, applications, and business use cases.

+ Exploring opportunities to add value for shareholders through the introduction of new deep-tech assets, while selling or divesting the Company's historical mineral exploration tenements.

The Board of Archer authorised this announcement to be given to ASX.

ASX Code: AXE
ACN: 123 993 233

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LinkedIn: https://www.linkedin.com/company/archerxau
YouTube: https://bit.ly/2UKBBmG

Sign up to our Newsletter: http://eepurl.com/dKosXI

Appendices

Board and Executive Management (Slide 5)

Greg English *LLB, BE (Mining)*
Executive Chairman

Greg English is the co-founder and Executive Chairman of Archer. He has been Chairman of the board since 2008 and has overseen Archer's transition from a South Australian focussed minerals exploration company to a diverse materials technology company. He has more than 25 years of engineering and legal experience and has held senior roles for Australian and multinational companies. Greg has received recognition for his work as a lawyer in The Best Lawyers® in Australia, 2020 Edition in the area of Commercial Law. Greg is an experienced company director and also serves on the boards of other ASX listed companies. He holds a bachelor's degree in mining engineering and a law degree.

Alice McCleary *DUniv, BEc FCA FTIA FACID*
Non-executive Director

Alice McCleary is a Chartered Accountant. She is a director of .au Domain Administration Limited, and Deputy Chair of the Uniting Church of South Australia's Resources Board. She is a former Chairman of ASX Listed Company Twenty Seven Co. Limited (ASX:TSC) and former Director of Adelaide Community Healthcare Alliance Inc. (ACHA), Benefund Ltd and Forestry Corporation of South Australia. Previous leadership roles include Vice-President of the South Australian Chamber of Mines and Energy (SACOME), Deputy Chancellor of the University of South Australia and National President of the Taxation Institute of Australia. Alice's professional interests include financial management and corporate governance.

Kenneth Williams *BEc (Hons), M APP FIN, FAICD*
Non-executive Director

Ken Williams has 30 years' experience in corporate finance, is a Fellow of the Australian Institute of Company Directors, and is currently the Independent Chair of Statewide Super, a Director of the Lifetime Support Authority (LSA) of SA, Chair of the Finance & Investment Committee of the LSA and a member of the Council of the University of Adelaide. He has held senior finance executive roles with Normandy Mining Limited, Qantas Airways Limited and Renison Goldfields Limited, among other companies. Specialising in treasury and financial risk management, his directorship experience has spanned both large and small listed and private companies, not-for-profit organisations, and superannuation funds.

Appendices

Board and Executive Management (Slide 5)

Mohammad Choucair *PhD, FRACI FRSN GAICD*
Chief Executive Officer

Dr Mohammad Choucair was appointed Chief Executive Officer on 1st December 2017. Dr Choucair is alumni of the AGSM UNSW Business School and has a deep-tech background in nanotechnology. He has spent the last decade implementing governance, control and key compliance requirements for the commercial development of innovative technologies with global impact. Dr Choucair served a 2-year mandate on the World Economic Forum Global Council for Advanced Materials and is a Fellow of both The Royal Society of New South Wales and The Royal Australian Chemical Institute. He has a strong record of delivering innovation and has been recognised internationally as a forward thinker.

Damien Connor *CA GAICD AGIA B.Com*
Chief Financial Officer & Company Secretary

Damien Connor was appointed Company Secretary on 1 August 2014. Damien performs the financial/accounting role in the Company as well as the secretarial duties. Damien has been a member of the Institute of Chartered Accountants since 2002 and is a Graduate of the Australian Institute of Company Directors and a Member of the Governance Institute of Australia. He also provides Company Secretary and Chief Financial Officer services to other ASX-listed and unlisted entities.