

D2 — Justification of Funding Requested from the ARC

DRAFT - Dr Yuefeng Yin - FT26 baseline for FT27 review

Personnel

Dr Yuefeng Yin (Future Fellowship)

Dr Yin is appointed at Academic Level B, Step 5 at 1.0 FTE + 30% on costs for the four years of the fellowship.

HDR (Higher Degree by Research stipend)

Funding of one Postgraduate Stipend (\$33,533 p.a.) is sought through the ARC for a period of 4 years.

Travel

Total Travel

Year 1: Dr Yin will attend the Australian Institute of Physics (AIP) Congress to present his research and engage with both domestic and international members of the physics community. Participation in this conference will strengthen Dr Yin's leadership within Australia's materials physics community, which is essential for advancing the goals of this fellowship.

Cost estimation: \$1,000 (registration) + \$300 (flight) + \$200 (other transportation) + \$700 (accommodation) + \$300 (food and other incidentals) = \$2,500 in total for Dr Yin to attend the 5-day congress.

Year 2: Dr Yin and two HDR students will attend the APS Global Physics Summit in the United States to present research outcomes from the fellowship and engage with the international physics community. Participation in this conference is vital for increasing the visibility of the fellowship's work, fostering new collaborations with leading researchers, and supporting the professional development of Dr Yin and the two HDR students.

Cost estimation: \$1,400 (registration) + \$6,000 (flight) + \$600 (other transportation) + \$3,000 (accommodation) + \$1,800 (food and other incidentals) = \$12,800 in total for Dr Yin and two HDRs to attend the 5-day summit.

Dr Yin will travel to Robinson Institute at Victoria University of Wellington to present his research and interact with fellow researchers to strengthen the Trans-Tasman research collaboration on research on quantum materials, which fulfill this fellowship's vision to advance the international leadership in this field.

Cost estimation: \$800 (flight) + \$200 (other transportation) + \$875 (accommodation) + \$700 (food and other incidentals) = \$2,575 in total for Dr Yin to undertake a one-week visit.

Year 3: Dr Yin and two HDR students will attend the MRS Spring Meeting in the United States to present research outcomes from the fellowship and engage with the international physics community. Participation in this conference is vital for increasing the visibility of the fellowship's work, fostering new collaborations with leading researchers, and supporting the professional development of Dr Yin and the two HDR students.

Cost estimation: \$1,400 (registration) + \$6,000 (flight) + \$600 (other transportation) + \$2,400 (accommodation) + \$1,440 (food and other incidentals) = \$11,840 in total for Dr Yin and two HDRs to attend the 4-day meeting.

Dr Yin will travel to the Institute of Physical and Chemical Research (RIKEN) in Japan for a strategic visit to present his research and collaborate with leading researchers in the study of the electronic structure of amorphous materials. This visit is essential for the success of the fellowship and for strengthening international leadership in this field.

Cost estimation: \$2,000 (flight) + \$200 (other transportation) + \$700 (accommodation) + \$700 (food and other incidentals) = \$3,600 in total for Dr Yin to undertake a one-week visit.

Year 4: Dr Yin and two HDR students will travel to the University of New South Wales (UNSW) to attend the Gordon Godfrey Workshop on Spins, Topology, and Strong Electron Correlations, where they will present the research outcome from this fellowship and engage with both Australian and international condensed matter physics community. Participation in this workshop is essential for strengthening Dr Yin's leadership in the field of computational materials science and critical for the training of two HDR students.

Cost estimation: \$900 (flight) + \$600 (other transportation) + \$3,000 (accommodation) + \$1,800 (food and other incidentals) = \$6,300 in total for Dr Yin and two HDRs to attend the 5-day workshop.

Dr Yin will travel to Sandia National Laboratories and the University of Pennsylvania in the United States for a strategic visit to present his research and explore experimental collaborations on the nanofabrication of disordered materials. This initiative is expected to involve joint experimental work with Prof. Michael Fuhrer and A/Prof. Julie Karel at Monash University. During the U.S. visit, Dr Yin will also engage with end-user groups in the United States through the support of TQ Transistors' U.S. subsidiary to promote the potential research translation of the fellowship's outcomes. This visit will be critical to achieving the goals of the fellowship and will play an important role in Dr Yin's professional development.

Cost estimation: \$3,000 (flight) + \$500 (other transportation) + \$2,800 (accommodation) + \$2,000 (food and other incidentals) = \$8,300 in total for Dr Yin to undertake a two-week visit.

The total cost for the travel for this fellowship requested from ARC is \$2,500 (Year 1) + \$15,375 (Year 2) + \$15,440 (Year 3) + \$14,600 (Year 4) = \$47,915.

Equipment

Total equipment

Year 1: A software licence for conducting first-principles calculations is essential. An academic VASP licence will be purchased to support the establishment of Dr Yin's research group and will be shared with two HDR students. The VASP license will need to be used for the period of the fellowship (four years). The cost of a new VASP licence is estimated at \$8,000.

A high-performance mobile workstation is necessary for conducting modelling and data analysis for the fellowship of computational nature. Mobile workstation should be able to compile and run complex programs, conduct large-scale visualisations and carry out AI/machine learning tasks, which are all essential functions to fulfill the objective set in the fellowship's tasks. Three workstations will be purchased for Dr Yin and two HDR students. These mobile workstations will need to be used for the period of the fellowship (four years). An excellent candidate will be Apple MacBook Pro 14-inch M4 MAX/64 GB RAM/1TB SSD, cost at \$4,995 (Apple Educational pricing). Then the total cost will be estimated as \$14,985.

The total cost for the equipment for this fellowship requested from ARC is \$8,000 + \$14,985 = \$22,985 (Year 1 only).

Other

Total other expense

Year 2: Article Processing Charges (APC) are required to publish research outcomes from the fellowship in high-impact open-access journals such as Nature Communications and Science Advances. The APC is estimated at \$11,000 per article. Funding for one publication is allocated for this year.

Year 3: APC funding is requested for one publication at \$11,000.

Year 4: APC funding is requested for one publication at \$11,000.

The total cost for Other for this fellowship requested from ARC is \$11,000 (Year 2) + \$11,000 (Year 3) + \$11,000 (Year 4) = \$33,000.