

## OPPORTUNITIES FOR A TRAINED WORKFORCE

Physics lies at the heart of science, crossing the boundaries of chemistry, biology, engineering and medicine. It allows us to design solutions to outstanding problems and invent new ideas that are revolutionising our world. Physics is one of Australia's research strengths and the foundation of many of our technologies. It supports our economic output and produces significant spin-offs for both industry and society.

Industry and business have many employment opportunities for Australian physicists and would benefit greatly from a higher number of physics graduates. There are already a number of successful models of industry collaboration with universities in the mining, information and communication technologies and biomedical industries.

Excellent opportunities exist for capturing the expertise of a physics-trained workforce for the benefit of industry. At the same time industry and business are vital parts of the overall physics community. There are numerous latent opportunities that may be realised by greater interaction with academic researchers. This symbiosis is well developed in the leading industrial nations.

## PHYSICS FOR THE BENEFIT OF INDUSTRY

In Australia, the mining and scientific instrument industries and the medical imaging sectors are continually seeking physicists for employment. By 2020 the demand for physics-trained individuals will outstrip supply. Already, the lack of highly qualified Australian physicists entering these fields forces companies to recruit from overseas, particularly from the former Eastern Bloc countries and Asia. If not addressed, such skills shortage in physics and engineering will ensure that Australia will miss out on many opportunities.

Well trained physics graduates will have optimal chances of contributing their skills to the diverse workforce in many areas of industry, government and academia. Strengthening the relationship between research and industry and encouraging physicists to pursue careers in industry will accelerate the translation of discoveries into innovation. It will highlight employment opportunities for graduates and allow industry to identify talent and access capable graduates for employment.

Industry partnerships with physics-based facilities and enhanced industry investment in research will ensure growth in innovation productivity and in-house research capacity.

The anticipated gains can be shared mutually, through greater commercialisation success for the education sector and superior innovation in industry through the intermingling of pure and applied research endeavours.

## CREATING PRODUCTIVE PARTNERSHIPS

The *Physics Decadal Plan* outlines ways in which to address skills shortages in the Australian research and technology sector by

- ▶ **Creating equitable career pathways and removing disadvantages** in order to attract and retain valuable members of the physics community to work in both industry and research, including women, indigenous Australians, early- to mid-career researchers and those taking career breaks from professional roles
- ▶ **Encouraging the flow of research staff between universities, government agencies and industry** by removing red tape, freeing up superannuation arrangements and improving reward and promotion practices
- ▶ **Establishing a placement scheme** embedding PhD-trained research staff in industry to enhance corporate innovation
- ▶ **Encouraging greater participation in cross-disciplinary research** to address research questions of high complexity and problems of national importance.

This can be achieved through a concerted effort and a series of parallel measures by government, industry, universities and the research community.

# IMPROVING PARTNERSHIPS BETWEEN INDUSTRY AND ACADEMIA WILL BOOST INDUSTRY-DRIVEN APPLIED AND COMMERCIAL RESEARCH

The National Committee for Physics is a committee of the Council of the Australian Academy of Science. The broad aims of the committee are to foster physics in Australia, to link the Academy to Australian physicists and relevant scientific societies, and to serve as a link between Australian and overseas physicists, primarily through the International Union for Pure and Applied Physics and the International Commission for Optics.

The Council of the Australian Academy of Science biennially seeks the advice of the National Committee for Physics, in consultation with the National Committee for Chemistry, on the award of the Geoffrey Frew Fellowship. Fellowships are awarded to distinguished overseas scientists to participate in the biennial Australasian Conference on Optics, Lasers and Spectroscopy and to visit scientific centres in Australia.



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## PHYSICS FOR AUSTRALIAN INDUSTRY