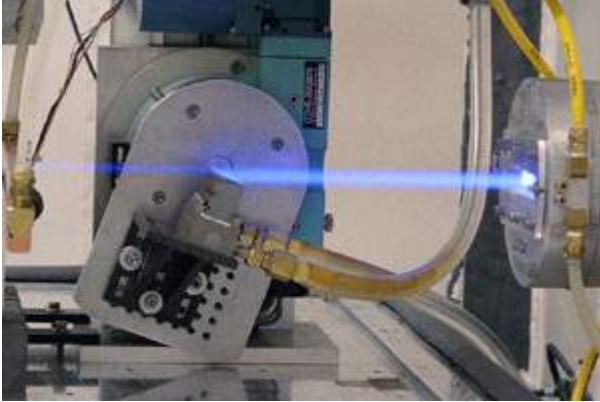


Scientific project aims to unite East & West

Paul Parsons; Last Updated: Nov 29. 2008 9:30AM UAE / Nov 29. 2008 5:30AM GMT



Behold the synchrotron. Courtesy US Department of Energy

Science may seem an unlikely instrument for peace, but a physics experiment in Jordan is bringing together nations historically at odds. Scientists and engineers from Muslim states including Iran and the Palestinian territories are working side-by-side with those from Israel; Greek and Turkish physicists are co-operating with little thought to their respective countries' hundreds of years-old enmity.

Some in the region are even hoping the project may herald a return to the days when the Arab world dominated the field of science.

The experiment is called Sesame (Synchrotron Light for Experimental Science and Applications in the Middle East). It is being built 30.5 kilometres north-west of the Jordanian capital, Amman.

Sesame is a synchrotron – a device that generates beams of X-rays a million times more intense than hospital machines. It lets researchers peer inside materials, rather like a super-powerful microscope.

Things like proteins, viruses and other complex molecules can be studied in unprecedented detail to reveal what they are made of and how they work. This makes synchrotrons vital tools for the basic sciences – physics, biology, chemistry – as well as applied subjects like engineering and pharmaceuticals development.

It could benefit Middle Eastern science in fields from engineering and pharmaceuticals to archaeology and even the environment by allowing a better understanding of pollutants and their components.

“Oil generates toxic waste. That’s a big deal in the Middle East,” said Prof Herman Winick, at the University of Stanford, California. “Scientists there have their own unique environmental concerns, and they can study them with synchrotron radiation.”

Sesame was Prof Winick’s brainchild. Back in 1997, he learned that a synchrotron experiment in Berlin, called Bessy I, was destined for the scrapyard. Horrified, Prof Winick intervened and saw to it that Bessy was shipped as a gift to the Middle East, to form the centrepiece of a new research laboratory.

Not only would science in the region benefit from having such a top-flight facility right on its doorstep but, he reasoned, the possibilities for international collaboration on the project might just help foster peace.

It was a strategy that had been used to good effect once before. When the international physics lab CERN, on the Franco-Swiss border, opened its doors in 1954, part of the plan was to pull together scientists from a Europe still fractured by the devastation of the Second World War. It was hoped physicists from nations that had been bitter enemies just a few short years earlier could collaborate on projects for the common good.

It worked. And along the way, CERN became a world leader in particle physics research. Today, it is home to the Large Hadron Collider – the world’s most powerful particle accelerator experiment, expected to transform our understanding of the subatomic world.

“CERN is a good example of a ‘science for peace’ project,” said Dr Mohammad Gharaibeh, a Jordanian scientist.

There were high hopes that Sesame would do the same for the Middle East. In 2000, Jordan was elected to host the project. Bessy was dismantled, and Unesco, the UN’s cultural division, paid US\$50,000 (Dh184,000) to dismantle and ship it from Germany in 2002. The Jordanian government provided land and \$7 million to construct a building to house the machine.

Meanwhile, a former director of CERN was appointed to oversee proceedings.

Engineers are now working to reassemble the machine in its newly completed premises near Amman. But there is a hitch. Not all of the German components could be salvaged. New ones must be bought and Sesame’s accounts currently fall short of the anticipated cost by around \$19m.

Dr Gharaibeh hopes more Middle Eastern nations will come forward to join the Sesame partnership – which currently consists of Bahrain, Cyprus, Egypt, Greece, Iran, Israel, Jordan, Pakistan, the Palestinian Territories and Turkey. “UAE scientists have participated in previous meetings of the Sesame council – it is expected that the UAE will soon join,” said Prof Winick.

But time is running out. Already, researchers working on the project are losing patience and taking jobs elsewhere. “The Sesame synchrotron project in Amman would be a hugely missed opportunity if it falters due to lack of funds,” said Prof Jim al Khalili, an Iraqi-born physicist at the University of Surrey, UK.

It would indeed be a cruel twist given the region’s history. A thousand years ago, Arab science led the world. “During the Abbasid Empire of the eighth-11th centuries, science in the region flourished because of a rational, inclusive and tolerant attitude that brought together Muslim, Christian and Jewish scholars in a spirit of free co-operation,” he said.

“Here at last is the first real opportunity for the Arab world to show its willingness to recreate that atmosphere. We cannot afford to miss the boat.”

* The Abu Dhabi National; an English language paper in the United Arab Emirates.