extract a few atoms from the condensate at a time, to form a primitive version of a pulsed atom laser: a beam of atoms that are in the same quantum state. They could excite collective modes in the condensate and watch the atoms slosh back and forth. These results matched the theoretical predictions quite well.

BEC in dilute gases has since been achieved in several laboratories around the world. Apart from Rb and Na, it has been observed in the alkali atom Li. The atomic H group at MIT achieved it in 1998. Metastable He has also been cooled to the BEC limit. Recently, an Rb BEC was obtained by evaporative cooling in an all-optical trap. The trap is formed using tightly-focused laser beams from a CO_2 laser, thus eliminating the need for strong magnetic fields. The variety of systems and techniques to get BEC promises many applications for condensates. The primary application, of course, is as a fertile testing ground for our understanding of many-body physics, bringing together the fields of atomic physics and condensed-matter physics. A sample list of potential topics includes the study of ultra-cold collisions, collective and particle-like excitations of condensates, vortices, spin systems, mixed fermionic and bosonic systems, etc. In precision measurements, the availability of a giant coherent atom should give enormous increase in sensitivity. BECs could also impact the emerging field of nanotechnology, since the ability to manipulate atoms greatly increases with their coherence. In some ways, BEC is to matter waves what a laser is to light waves. Just as lasers have impacted our daily lives in ways that were impossible to imagine when they were first invented, BECs promise to impact the technology of the future in exciting new ways. This must have been uppermost in the mind of the Nobel Committee when it awarded this year's prize in Physics.

In conclusion, let me acknowledge that the experiments using BECs have been truly beautiful illustrations of quantum physics. Many of the results have appeared on the covers of scientific journals and magazines. Some have even appeared in the popular press. Perhaps it is the name Einstein in the word BEC which holds the magic that catches everyone's attention. But the fact remains that even scientists, who are better known for their austere reliance on cold facts, have described the experiments using BECs as being 'beautiful', a word that is often reserved for the finer arts. I am personally very pleased that these physics experiments can trigger other people to see beauty, and I mentioned this to Wolfgang Ketterle when I sent him a congratulatory email on winning the Nobel Prize. So let me end this article with a quote from his response: 'Beauty is created by nature, sometimes we succeed in making it visible'. In these dark and ugly times, when we are surrounded by terrorism and war, I hope that more scientists are able to make the beauty in nature visible to others, and help us rise above the narrow-mindedness that leads to war.

For further reading please visit the following websites: http://jilawww.colorado.edu/bec/; http://www.colorado.edu/physics/2000/bec/index.html; http://cua.mit.edu/ketterle_group/

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Biological Weapons Convention—Comatose and barely alive

The Fifth Biological Weapons Convention (BWC) Review Conference convened in Geneva under the aegis of the United Nations collapsed on 7 December 2001. Failing to adopt a final declaration, 144 frustrated States parties to the Convention gave themselves a lollipop: A decision to suspend the conference and reconvene in November 2002.

Six months ago in July, the United States had rejected the outcome of six-and-a-half years of work on a Biological Weapons (BW) protocol, declaring that the 'rolling text' of the protocol was unacceptable to US, and that no amendments could make it acceptable. This decision was widely criticized, including by close allies of the US. However, following the 'anthrax' cases last October–November, heightened concerns on bio-terrorism, and a set of new proposals put forward by the US itself, there was some expectation that this review conference might take a few significant political steps, and agree on some national measures, even if it were not possible to agree to multilaterally negotiated implementation steps that would be legally binding (by treaty) on all States parties.

But the US insisted that the final declaration also include a strong statement on prevalence of non-compliance with BWC by signatory States parties as an established fact, not merely a suspicion. Indeed, US Under-Secretary of State for Arms Control and International Security, John R. Bolton openly named signatory States parties (Iran, Iraq, North Korea and Libya) as producers of BW agents. Other countries were clearly unwilling to accept what delegates from Iran termed (off-conference) 'proofless accusation' that the Convention had thus, by implication, been ineffective.

On other issues before the Review Conference incremental progress led to expectations that the conference would have a positive, even if only a modest outcome. Delegates at the convention were resigned to the inevitable, viz. Given the hard US stance, negotiations (suspended in July) towards an acceptable 'implementation protocol' would not be resumed. However, the mandate agreed to in 1994—'to strengthen the Convention through a legally binding instrument' had not been questioned till the very last afternoon. This mandate could have remained valid awaiting a favourable political environment (like 'sleeping beauty' – in Conference President Hungary's Ambassador Tibor Toth's words – to be awakened by the kiss of a suiting prince-protocol).

India was represented by her experienced Permanent Representative to the UN Conference on Disarmament (UN-CD), Ambassador Rakesh Sood, supported by technical experts from DRDO and ICMR. Sood was joined in the last week of the Conference by a team comprising S. K. Sharma, the physicist–Joint Secretary-in-charge of Disarmament and International Security Affairs in the Ministry of External Affairs, in tandem with the scientist-architect of India's system of control over the export of 'dual-use' materials and equipment pertinent to the development and production of bio-weapons.

India made strenuous efforts to save the Conference. Sood even hosted a lunch on 7 December for all key players, including Bolton, Ambassador Sha Zukang of

China and Ambassador Ali Asghar Soltanieh of Iran. A text of a crucial clause that could have saved the Conference was hammered-out. This progress as also the birthday of Les Luck, the Australian Ambassador to the UN-CD, were celebrated with a 'dual-use' lighted cake!

However, after this lunch, during the last working afternoon (7 December), the US insisted on reopening previously agreed text, changed tack to a harder line and finally, two hours before conclusion, proposed that: (a) the ad hoc group (created to evolve the protocol) and its mandate be 'terminated'; and (b) annual meetings of the Conference would not negotiate – but only examine – issues, and provide a report. This US proposal was rejected by, besides India, the European Union, Japan, Canada, Russia, China, Iran, and several other countries. The European Union delegate went so far as to call the US delegation 'liars', adding that in 'decades of multilateral negotiations, we have never experienced this kind of insulting behaviour'.

Diplomats – including from countries militarily allied with the US – view the US decision to brave the odium of isolation at the Fifth BWC Review Conference as indicating the increasingly unilateral positions of the Bush administration on non-proliferation, security and disarmament issues. Scientists are grouped into those who believe the US position was forced by its biotechnological industry which could not countenance any 'inspections' (mandated by the still-born BWC implementation protocol) that might compromise industry's secrets; and those who darkly hint at the existence of a US bio-weapons programme.

For more depressing allied stories, see: www.brad.ac.uk/acad/sbtwc/; www.fas.org/; www.commondreams.org/ news2001/1207-05.htm

Editors' note: This news item was contributed by a member of the Editorial Board of *Current Science* who was present during the Conference in Geneva. He adds: 'This story is just one of the burgeoning number of examples of the global interrelationships between developments in science and technology, military strategy, geo-politics and the practice of the art of diplomacy. Our scientific community would do well to understand and appreciate that their international contacts and collaborative work in science and technology will, *willy-nilly*, be increasingly circumscribed by such evolving geo-political, geo-military and geo-diplomatic dynamics.'

Sophisticated Instrumentation Centre for Applied Research and Testing, Vallabh Vidyanagar, Gujarat

The Department of Science and Technology (DST) has set up Regional Sophisticated Instrumentation Centres (RSICs) in different regions of the country to provide sophisticated analytical instruments to help research workers pursue important developments/R&D activities requiring such facilities and for optimal utilization of available resources. About 6000 users from academic, R&D institutions and industries from all over the country are utilizing the facilities, offered by these centres every year.

Recently, a Sophisticated Instrumentation Centre for Applied Research and Testing (SICART) has been set up adjoining the Sardar Patel University in Vallabh Vidyanagar, Anand, Gujarat by Charutar Vidya Mandal (CVM), an educational trust with support from DST under its RSIC programme, for users from Gujarat. The equipment available at this SICART are: Scanning Electron Microscope with EDAX, Transmission Electron Microscope (200 kV), X-ray Diffractometer (powder), Thermal Analysis Instruments (DTA/TGA/DSC), Gas Chromatograph, GC-Mass Spectrometer, HPLC, C-H-N-O-S Microanalyser, Laser Particle Size Analyser, UV-VIS-NIR, FT-IR and ICP Spectrometers, Microhardness Tester, Universal Testing Machine, Liquid Nitrogen Plant and usual sample preparation accessories associated with these instruments. These facilities have become fully functional during the current year and have been put to use. Equipment including Laser Flash Thermal Conductivity Meter, Gel Permeation Chromatograph and Mercury Porosimeter are in the process of being procured.

SICART will also offer solution to analytical problems, including sample preparation, development of analytical methods for specific needs and interpretation of results, etc. It will also organize courses/workshops regularly on the use and application of various instruments and analytical techniques; train technicians for maintenance and operation of sophisticated instruments and provide consultancy/R&D facilities to the industries in the region and help them in measurement, calibration and testing of quality of raw materials and end products. SICART will also undertake R&D projects in various areas of applied science and technology. Apart from the core team at SICART, expertise available at Sardar Patel University and various institutions around it will be utilized, to offer the various services as mentioned above. Some of these activities/services have already been started by SICART.

The instruments/facilities at SICART will be useful in chemical and material analysis/testing and characterization, including qualitative and quantitative, elemental molecular/compound analysis, structure determination, surface/topographic studies, study of physical, mechanical, optical and electrical properties of materials and various tests such as tensile, fatigue, compression, impact strengths and environment tests, etc. Purity of inputs, chemicals, natural and synthetic products and raw materials as well as purity of end products can be tested, verified and certified. Apart from the users from academic and R&D institutions, the facilities at SICART will be helpful to a variety of other agencies/organizations. The services provided at SICART are available to any user from anywhere in the country. The services are offered on payment of nominal charges.

The SICART is in the process of getting itself accredited under the National Board for Testing and Calibration Laboratories (NABL). The SICART has set-up an interactive website www.sicart.ac.in. Users will be able to book their samples as well as receive analysis results on-line. It is also planned to collect samples from the laboratories/user's sites through mobile sample-collection units.

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