

# ISRAEL HIGH-TECH & INVESTMENT REPORT

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## Collateral Damage



The ongoing recession is effecting employment in the high-tech sector. Additionally there is collateral damage which is hurting two areas of activity: initial public

offerings (IPOs) and startup capital.

A recent study shows a marked decrease in both the number and in the size of IPOs, when compared with the, already disappointing, third quarter of 2008, and a dramatic decrease in IPO activity compared to the fourth quarter of 2007. The fourth quarter typically displays strong IPO activity, but the fourth quarter of 2008 showed the lowest IPO activity since the first quarter of 2003, when new issue market confidence was weakened by the uncertainty surrounding events in the Middle East. Unaffected, so far, is the merger and acquisition market.

Among the benefits of IPOs is the fact that some of the money so raised is earmarked for new investments. Entrepreneurs do not like to leave money on the sidelines and are likely, in the aftermath of an IPO, to look for new investment possibilities.

Perhaps even more harmful to the high-tech industry is the decrease of investment capital in startup companies. It is evident among angel investment community which has been hurt by the recession. As a result these usually intrepid investors are less likely to inject risk capital.

To the best of our knowledge, funds available for startups from the Office of the Chief Scientist are still available.

This situation has increased the risk of startup failure. Venture capital companies claim that

they are not launching new investments as they are retaining their funds to support their existing basket of investments.

As these issues play through the industry it becomes clear, that in due course, exports will decrease.

In 2000 the Israeli high-tech industry had a

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record year when it raised more than \$3.0b. It has never rebounded to the highs though 2007 was a satisfactory year.

In the past the high-tech industry has shown a high degree of resiliency and hopes are for a rebound in 2010.

**James Bond like gadgets**

A spherical camera, known as the 'Eyeball', created by ODF Optronics, a company in Tel Aviv, which can be tossed into a building to transmit images to the soldiers waiting outside, allowing for increased information before an attack. While the 'Eyeball' is for tossing the Eyedrive, is a lightweight, four-wheel, remote-controlled, observation and surveillance mini-robot that provides continuous, real-time 360° audio and video surveillance.

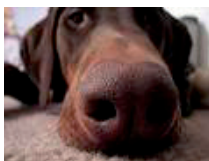


Another item is a sniper rifle, currently being tested by the same company. Known as the HTR 2000, it will give infantry soldiers a long range firing weapon that can easily reach 1,000 meters. Originally created by American-based H-S Precision, it has an added night vision scope, and is hoped to give soldiers an increased target accuracy.

Each of these weapons has been used in the Israel/Gaza conflict, Operation Cast Lead.

**Cancer-sniffing nose yields promising results**

Clinical trial of Technion-developed device that detects cancer, including its type and location, ends with positive results at 92% success rate.



A cancer-sniffing nose developed by a Technion - Israel Institute of Technology researcher yielded promising results in a study conducted on some 100 people at the Rambam Medical Center in Haifa.

The research showed that the electronic nose is capable of efficiently and accurately

distinguishing between cancer patients and healthy people, and could even detect the location and nature of the tumor. The success rate for the detection of the type of tumor stood at 92%.

One of the most difficult battles in fighting cancer is the early detection of tumors. The sooner it is detected, a wider variety of treatments are available to the patient, as a result. he then has a greater chance of recovery.

Scientists have known for some time now that dogs are capable of detecting cancer in earlier stages by sniffing the patient's breath. Dogs are able to identify molecules created by a tumor that circulate through patient's blood to the lungs, and leave the body when the patient exhales.

The Israeli "artificial nose" was developed based on this knowledge, and the final product is very close to a dog's olfactory system.

Dr. Hossam Haick, of the Russell Berrie Nanotechnology Institute in the Technion's Faculty of Chemical Engineering heads the team which developed the nose.

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Some six months ago a local newspaper reported that Haick and his team have proved that their system could differentiate between sick and healthy people tested under lab conditions.

Research has now reached the experimental stage of clinical trial, which showed that the nose could not only tell the difference between healthy and sick people, but could also identify the type of tumor in question.

In the trial, which was conducted in cooperation with Professor Abraham Kutner Director of the Rambam Medical Center Oncology Institute, breath samples were taken from 40 healthy people and 62 cancer patients treated in the hospital.

The patients taking part in the experiment suffered from lung, breast, colon, prostate, head and neck cancer.

The participants breathed into bags, which were transferred to the Technion for testing, and the results were compared to details of the patients' diseases according to the hospital's records.

In the future, people being tested will be able to breathe directly into the device.

The electronic nose tested all the samples, and the findings showed that each type of cancer has a specific pattern of characteristic components.

### **Biodiesel Galten to float an IPO on TASE**

Defying the dearth of new issues Biodeisel start-up Galten is considering an IPO on the Tel Aviv Stock Exchange (TASE). The Kadima-based company wants to raise \$10 million. Xpert Financial Group will handle the IPO.



Galten uses the seeds of the inedible Jatropha plant to produce biodiesel. Jatropha seeds have an oil content of 31-37%. The company says that the plant can be used instead of edible crops for first-generation biodiesel. It notes that ten dunam (2.5 acres) of edible crops such as corn or soy beans can produce one ton of oil, whereas the Jatropha variety developed by the

company can produce three tons.

Last summer, Galten completed a pilot program that demonstrated the feasibility of the R&D at a 250-acre site in Ghana. The company currently grows Jatropha at a 1,000-acre site in that country.

Galten chairman COO Doron Levi and CEO Shlomi Jonas founded the company in 2006.

### **Advances in asthma treatment**

It is estimated that asthma and other allergic diseases affect 20% of the world's population.

The

number of sufferers in the United States exceeds 15 million. In the last 20 years, the number of asthma hospitalizations has increased by 50%. In the past ten years the number of asthma deaths has doubled! Dr. Ilan Zamir, one of the pioneers of homeopathy in Israel, has recently reported successful treatment of asthmatic patients with his own homeopathic methods.

Eight years ago, it was determined that 10% of all new Israeli Defence Forces recruits had suffered from asthma at some time in the past, while 6% were current asthma sufferers.

Asthma, shortness of breath and spastic bronchitis are basically the same phenomenon, caused by the sensitivity and over-reaction of the respiratory system, with the contraction of the smooth muscle from any small irritation. In addition, at the time of the spasm of contractions, inflammatory cells are detected in the respiratory system. Some physicians believe that this is responsible for the spasms, resulting in a form of coarseness, whistles, cough and lack of breath - which can lead to death by asphyxia.

Environmental pollution agents, such as household dust, which increases the presence microscopic insects living in bed linen and in other parts of the house, only aggravate the problem, as do the presence of cockroaches, pets, and smoking (including passive smoking). High humidity and sport activities which dry out the respiratory system also serve to aggravate the problem. Mental and psychological stress may also exacerbate asthma symptoms.

Conventional treatment consists of medication to expand the bronchi by means of inhalation or swallowing, imitating the effect of adrenalin in

the body. In severe cases, medicines containing steroids are given as preventive treatment to break down the inflammatory process. The generally accepted opinion is, however, that there is no known cure for asthma.

According to Dr. Ilan Zamir, the basic problem in dealing with asthma is that it almost always starts after an infectious disease, such as ear or throat infections or bronchitis, for which the patient is prescribed antibiotics.

Dr. Zamir has developed his own modified homeopathic method. He uses homeopathic substances made of natural raw materials, dissolved, for strengthening the body's natural immunity and to cure it of asthma and other diseases. With his method, Dr. Zamir claims almost 100% of success in the treatment of children. With adults, he says, the treatment's success depends on the stage of the disease and the degree of harm done by prior conventional treatment, especially the administration of steroids which can damage the adrenal glands. He has, however, successfully treated hundreds of adult cases.

### Seeing through walls

The ability to see through solid, non-transparent walls is a capability that everyone can immediately find applications for. For people who operate in hostile environments this ability can be the difference between success and failure of an operation. Failure may spell out casualties. The need for this technology has existed for a long time and now the Xaver 800 is mature to deliver this capability in a compact, portable device.

The Xaver 800 system creates an operational unfair advantage to the one who operates it. It pretty much changes the rules of the game, allowing a real shift in operational paradigms. Forces can plan ahead and beyond the wall they stand in front of, significantly increasing their mission success probability while protecting their lives.

The Xaver 800 is microwave radar that is capable of penetrating walls and creating an image of objects behind those walls by picking up the reflected energy from those objects. The system provides information regarding the number of people, their location and orientation,

as well as the shape of the room.

The system is basically a radar system, but with several unique characteristics. First and foremost, the operational environment is very different than ordinary radars, for air traffic control. Ordinary radar operates in free space over large distances and transmits very high power levels. The xavier system needs to penetrate walls and provide high resolution over relatively short distances. In addition, due to the fact that there are people in the immediate vicinity of the system we must keep microwave radiation at safe levels. The design utilizes special antenna design and an ultra wideband (UWB) signal to cope with the challenge. The use of UWB signal provides design simplicity on one hand, but required innovative implementation on the other.

The Xaver 800 can see through most commonly used wall materials, e.g. clay brick, cinder blocks, rebar reinforced concrete, plaster dry wall, wood, adobe and stone.

The system provides situational awareness of a room or building by providing information of how many people are behind the wall or walls; it also provides information on the structure of the building or rooms. Getting information from behind solid walls allows better preparation of an operation: reducing surprises, ensuring efficient use of resources and eventually saving lives.

Applications include:

- \* Military urban operations
- \* Hostage rescue
- \* Victim search and rescue

The Xaver 800 is a portable system. It weighs 15Kg/33lb and it folds to a compact 47cmX47cmX15cm ( 19" x 19" x 6") that can be easily carried and operated by a single person. The system consists of two parts – Front end (FE), which is the sensor part and Back end (BE), which is the operating and display unit. The two parts may be either attached to each other or connected by cable. Unfolding the sensor and mounting the system on a tripod takes less than one minute. The Xaver 800 delivers images within 15 seconds from pressing the ON/OFF button.

### **\$5b. a year is the cost of online fraud**

“E-commerce is one of the great promises of Internet business, but it has never really taken off, nor has it ever really failed,” said Prof. Sheizaf Rafaeli at the Consumers Online panel at the Israel Internet Association 2009 Conference today.

Rafaeli presented findings of a Ministry of Industry, Trade and Labor survey of 1,500 surfers aged over 14, conducted in January. He said that over 3.3 million people, 61.6% of Israel's over-14 population, said that they used the Internet in the past year.

### **BUSINESS FRAUD**

The most common uses were e-mail (85% of respondents), searches for information (82%), and news (81%). Interestingly, 90% of the respondents said that they surfed the web in Hebrew, and 25% said that they also surfed via their cellular telephones.

Fraud Sciences founder Saar Wilf said that online fraud was increasing in parallel with the increase in e-commerce. “Annual losses from online fraud total \$5 billion: \$4 billion in cash losses, and \$1 billion spent on preventing future fraud. To this should be added the unquantifiable losses from missed opportunities.”

Wilf added that the typical online thief was a young man in a developing country with a developed Internet infrastructure. He said, “There is also advertising fraud. A website advertises on another site and pays for it, which makes it possible to generate fictitious hits and traffic for which money is charged. This is a fairly new fraud, which largely developed on the basis of Google's model. It causes millions of dollars in losses a year.”

### **Israeli start-up Delver acquired by Sears**

US retailer Sears Holdings Corporation (Nasdaq: SHLD) has acquired Israeli start-up Delver Ltd., which was on the verge of closing down after failing to raise additional \$6 million in capital. The size of the deal was not disclosed, but it was probably not large, after Delver's failed financing attempt.

Delver co-founder and CEO Liad Agmon will move to the US and become a VP at Sears.

Delver's employees will continue to work in Israel and the company will operate as a Sears' development center. Delver will continue development of its search engine that improves the relevancy of web search results by prioritizing these results based upon the searcher's social network, as well as new products.

The acquisition fits in with Sears' policy to get into online services. As part of the retailer's restructuring in early 2008, it reorganized into five relatively independent units: operating businesses, support, brands, e-commerce, and real estate. Sears chairman Edward Lampert is the owner of hedge fund ESL Investments Inc., which controls the company.

A month ago, it was disclosed that Delver would close within 30 days, unless it found a buyer.. “We've been unable to raise capital in the current climate, and we're now seeking a buyer for the company, alongside negotiations with private investors.

### **Dead Sea brings life to skincare**

Israel's beauty and skincare industry is emerging as a new and rather potent player in the global cosmetics arena. The products range from established premium brands such as Ahava to newcomers such as Butai to the, mass-market Yes To Carrots, Israeli companies are tapping their nation for the raw materials, scientific innovations and home-spun creativity required to expand worldwide.

The best-known – and perhaps most ambitious – member of the sector is Ahava, which celebrated its 20th anniversary last year and is now sold in 30 countries. Anchored around Dead Sea salts and minerals and still partially owned by its kibbutz founders, Ahava has recently gone bricks-and-mortar, opening branded boutiques in Singapore, London and Berlin, along with its six flagship shops in Israel.



On a far larger scale is Yes To Carrots, which in three years has gone from a “cult” Tel Aviv brand to distribution in 20,000 stores in 17 countries – including Boots and Debenhams in the UK and

Walgreens and Duane Reade in the US – and \$50m in sales. Like other Israeli beauty product companies, Yes To Carrots is almost entirely organic, and combines locally grown fruits and vegetables with Dead Sea minerals.

As with Butai, Yes To Carrots – which includes some three dozen products for the hair, face and body – has been developed to maximize the benefits of its natural ingredients. “Orang foods like carrots are rich in beta carotene, antioxidants and free radicals,” says company founder Ido Leffler. “The Dead Sea minerals help them easily absorb into the skin, hair and body.”

Sabon and Laline are two Tel Aviv-based firms with rapidly growing global footprints. Thirty-five-year-old Sabon is the larger, with 80 shops throughout North America, Europe and Israel. Laline, meanwhile, expanded abroad in 2005 with four shops in the London area.

This may seem like an industry in its infancy compared to the dominant international players but the sector’s sheer determination is impressive considering Israel’s tiny size and modest population. Yet, says Kelly Kovack, a partner with Purpose Built, a New York-based branding consultancy specialising in cosmetics and skincare,

“Israel is a hotbed for science and technology, which trickles down into all categories of goods.” including cosmetics.

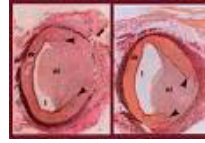
What’s more, Israel is “an incredibly mixed culture, with people originating from all over the world”, says Ronen Zohar, chief executive of Sabon, which will launch this year in Japan.

### **Technique for eliminating reblockage of arteries following angioplasty**

An easily implementable technique to avoid reblockage of arteries that have been cleared through angioplasty and stent insertion has been developed by researchers led by Prof. Boris Rubinsky of the Hebrew University of Jerusalem.

Angioplasty is the “gold-standard” treatment for acute myocardial infarction (heart attack), which is the result of abrupt interruption in blood

supply to part of the beating heart, usually due to plaque-rupture in an atherosclerotic (hardened) coronary artery.



In angioplasty, a cardiologist dilates the blocked artery by inserting a balloon that is inflated at the point of blockage. This is usually followed by coronary stent implantation to protect the artery and prevent restenosis (reocclusion or reblockage). However, the procedure damages the arterial wall, and therefore restenosis of the dilated artery remains a major clinical problem in cardiology, as well as in other fields of clinical medicine.

Since heart disease remains the leading cause of mortality in the western world, the technique developed by Prof. Rubinsky’s research teams offer a highly valuable tool for dealing with cardiology patients. Prof. Rubinsky is the director of the Center for Bioengineering in the Service of Humanity and Society at the Rachel and Selim Benin School of Computer Science and Engineering of the Hebrew University of Jerusalem and a professor in the graduate school at the University of California, Berkeley.

The technique employs the biophysical phenomenon of irreversible electroporation (IRE). IRE destroys cells within seconds, using very short electric field pulses. It causes no damage to structures other than the cells themselves. Compared with other technologies for local destruction of cells and tissue, IRE is simple and does not require special training of the medical team.

In IRE, electrical fields are applied across targeted cells, penetrating the cell membranes. This process leads to cell death, since the electrical fields cause permanent damage to the membranes and the consequent loss of cell stability. The electrical fields damage only the cell membranes, with no collateral damage to other structures in the treated area. While the phenomenon of irreversible electroporation was known for decades, a team led by Prof. Rubinsky developed a new mode of application that affects only selected molecules in tissue, and as a consequence it has become only recently rigorously considered in medicine for various applications of tissue removal. In an

article published March 9 in the journal PLoS ONE, Prof. Rubinsky's team demonstrated that IRE can efficiently, safely and quickly destroy the cells responsible for the restenosis phenomenon in rats. In the study, IRE successfully destroyed almost all of those cells in less than 23 seconds, with no damage to any other structures. Clinical trials on humans for restenosis treatment are planned in the near future.

IRE has been recently used for the first time on human subjects in Melbourne, Australia, for the treatment of prostate, liver and lung tumors.

Clinical trials for follow-up through IRE of angioplasty treatments are planned for the near future. Prof. Jay Lavee, head of the heart transplant unit at the Sheba Medical Center, Tel Hashomer, is cooperating with Prof. Rubinsky in development of the IRE technique for heart patients.

#### **Netafim wins massive ethanol crop contract**



Netafim Ltd. has won an exclusive contract with Etanal SA in Brazil to supply irrigation equipment for a

750,000-acre cane sugar plantation located in the Tocantins State in central Brazil.

Netafim's share of the project is worth an estimated \$150 million. The first stage of the ethanol project is worth more than \$900 million. Netafim has a subsidiary in Brazil.

Netafim agronomists and engineers will serve as advisors through the first stage of the project, which is slated to be completed in 2011.

Netafim recently signed a \$22 million contract to supply irrigation equipment to Maple Energy plc (AIM: MPLE) for an 80,000-hectare sugar cane plantation in northern Peru. The crop will be used to produce electricity and ethanol.

#### **Israeli energy start-up to turn traffic into source of electricity**

An Israeli energy start-up wants to turn irritating rush-hour traffic into a source of electricity.

Innowattech, an energy company affiliated with Israel's Technion Institute of Technology, said special generators placed under roads, railways



and runways can harvest enough energy from passing vehicles to mass-produce electricity.

The generators contain material that produces electricity when mechanical force is applied, like the pressure from a passing car's tires.

The process, known as piezoelectricity, has been used for years on a smaller scale, including in barbecue lighters and a dance club where the pounding feet of dancers light the floor.

Uri Amit, chairman of Innowattech, said the company's technology will be the largest application of piezoelectrics to date, with a single 1-km (half-mile)-lane of highway providing up to 100 kw of electricity, enough to power about 40 houses.

The technology has its limitations since it can collect a steady flow of electricity only from busy roads and rails. But Amit said that in any case, peak-hour morning and evening demand for power coincided with heavy traffic at the start and end of the business day.

"We can produce electricity anywhere there is a busy road using energy that normally goes to waste," Amit said.

He said the first pilot program would begin in the coming months on a 30 meter (90 foot) strip of highway outside Tel Aviv and that similar projects could start internationally in 2010.

Efstathios Meletis, chairman of the Materials Science and Engineering Department at the University of Texas at Arlington, said the Innowattech technology was a "sound idea that theoretically could be done".

But problems, he said, could arise in the implementation and the coordination needed to bury the generators over vast amounts of highways and train tracks.

One of the hurdles was finding a way to package the generators so they are effective when buried in the road. The company's chief scientist, Eugeny Harash, developed a casing that acts like asphalt. The generators are then put in the road during scheduled maintenance

in 30 cm (11 inch) squares.

“The asphalt is elastic and the pressure of each tire that passes is picked up by the generator, which is buried about 3 cm (1 inch) below the road’s surface,” Harash said. “The drivers won’t even feel a difference.”

The piezoelectric material lasts for at least 30 years, which is longer than most roads, Harash said.

The generators can also be placed in the sleepers, or cross ties, of rail tracks to harvest the energy of trains, he said.

The energy is transferred to storage systems that are set up along the road at about every 500 meters (0.3 miles). The power can then be fed into a main grid, or even used to charge batteries as part of a future electric car infrastructure.

Innowattech chairman Amit said the current cost for fitting a kilometer (half-mile) of one lane of highway is about \$650,000, with a cost of \$6,500 per kilowatt. He said when mass production begins, the price could drop by two thirds, making the system even cheaper than solar energy systems.

The company said the target cost of generation is 3-10 cents per kilowatt/hour, depending on the amount of traffic. Wind generated energy has comparable costs.

### **Ben Gurion University researchers develop energy efficient windows**

Researchers at Ben-Gurion University of the Negev (BGU) in Israel have developed a highly efficient window technology that is warm in winter and cool in summer.

The window has a system of reversible panes that allows passive heating in winter and reduces solar heating in the summer.

The system consists of two panes – one clear airtight pane and a smaller tinted pane with openings at the top and bottom. The two panes are attached to a single frame that can be swivelled one way or the other depending on the season or the daily weather.

In winter or on cold days, the tinted pane faces indoors and absorbs short-wave solar

radiation transmitted through the clear pane. The tinted pane emits warmth into the room and the openings at the top and bottom also heat circulating air.

At other times when warm, the window is swivelled so that the tinted pane faces outwards and absorbs incoming solar radiation before reaching the interior-facing clear pane. Now the openings at the top and bottom of the tinted pane have a cooling effect instead.



“The ‘Seasons Window’ features the only glazing system that permits effective passive heating in winter without glare or high radiant temperature near a window and reduces unwanted solar gains in summer without obstructing the view outdoors,” says researcher Evyatar Erell.

For the moment, the window will only be available in Israel through aluminium company Alubin. But the technology would save energy in any sunny region with distinct hot and cold seasons. require about five cents per kilowatt/hour.

### **\$793m of capital raised by Israeli venture capital funds in 2008**

Israeli venture capital funds raised a total of \$793 million since January 2008, 30 percent less than the \$1.14 billion raised in 2007. A number of funds completed their capital raising efforts, including Carmel III with \$235 million, Gemini V with \$150 million and Cedar III with a \$100 million fund.

During 2008, a number of Israeli venture capital funds announced first closings for a total of over \$300. Israeli VC veterans Giza Venture Capital and Jerusalem Venture Partners, with their fifth funds, and Genesis Partners, with its fourth fund, each announced first closings of \$100 million.

In the past 10 years, Israeli venture capital funds attracted a total of some \$11 billion. According to IVC, about \$1 billion in capital is currently available for investment by Israeli venture capital funds, of which \$400 million is intended for first investments in high-tech companies and the remainder reserved for follow-on investments.



IVC Research Center predicts Israeli venture capital funds will raise an additional \$300 million in 2009 for investment in Israeli high technology over the next few years.

Israeli private equity funds that partly invest in technology companies, such as Fortissimo II, Israel Secondary Fund, Vintage IV Fund of



Funds, or Viola Private Equity that raised nearly \$400 million in 2008 combined, are not included in this review.

### Thirsty plants send ‘text’ message

Can a new device developed in Israel save growers the heartbreak of seeing their plants wither away for lack of water. Researchers at the Volcanic Center at the Agriculture Ministry have developed a new sensor that gauges moisture levels in plants and trees, and issues real-time alerts to farmers’ mobile phones or computers when watering is required.

The device, shaped like a hammer, is embedded in the tree trunk or plant root, where it monitors electrical currents. When such activity is low, the sensor issues an alert.

The researchers who developed the device said that it will be extremely useful to farmers growing fruits and vegetables, bringing down irrigation expenses by up to 50 percent.

The scholars involved in the project are Dr. Eran Raveh and Dr. Arie Nadler, experts in plant biology and ground science respectively. They presented the new sensor in an exhibition put on by the Agriculture Ministry in the Arava.

Raveh and Nadler said the sensor, which took seven years to develop, is intended to give farmers a comfortable, accessible and cheap way of lowering irrigation needs, thereby reducing costs as well as damage inflicted to plants by over-watering. They said that the technology employed in the device may be soon used in private homes as well.

“With this sensor, the level of irrigation, and primarily its timing, will be controlled by farmers themselves,” Nadler said.

The researchers also said that until now, farmers lacked simple, cheap and reliable tools to monitor water levels. Dr. Raveh said that in order to get a reliable picture of a plant’s moisture level, a farmer must check no fewer than 26 points on the ground around the plant, but that a small number of the newly-developed sensors can now do that work instead.

“We are now trying to develop such a device for commercial purposes. We will reduce its size further, and distribute it to farmers at prices affordable to everyone,” he said.

### Zenith Solar to open first solar energy solar farm

ZenithSolar, an Israeli start-up company to license revolutionary solar energy technologies, will be launching its first “solar farm” in April 2009 based on Concentrated Photovoltaic (CPV) systems. Developed by Prof. David Faiman, Chairman of the Department of Solar Energy and Environmental Physics at the University’s Jacob Blaustein Institutes for Desert Research, the system will harvest more than 70% of incoming solar energy as compared to industry norms of 10% to 40%.

More than \$10 million of privately-raised capital from investors around the world has been invested in adapting the technology to real world conditions. The \$1.5 million outlay in the solar farm is providing a model that can be duplicated around the world. ZenithSolar plans to have models of the solar units available for wider distribution by the end of 2009.

The potential for this technology to provide low-cost, accessible energy for customers around the world is enormous. “Our system is simple enough to be applicable in almost any situation, whether it is industrial, commercial, residential or related to eco-tourism.

“By concentrating solar energy to a level 1000 times more intense than natural sunlight,” explains Prof. David Faiman, “and taking advantage of the higher efficiencies at which solar cells operate under these conditions, only minute amounts of expensive PV material are necessary to produce large amounts of power.”

He is sure that systems such as ZenithSolar's will accordingly eventually be able to operate economically without the need for subsidies.

### InterSense helps track firefighter location



With a new partnership and a pending product release into a new industry, precision motion technology developer InterSense Inc. of Bedford,

England is taking an aggressive approach to weathering the economic downturn.

In what officials feel could be a seminal deal for the 40-person company, InterSense struck a partnership with Israeli military training system developer BVR Systems Inc. with the aim of developing a personal location, tracking and monitoring device for firefighters and other first-responder personnel.

Dubbed the First Responders Independent Navigation Device, the project aims to develop a way to track emergency workers on a given site without the help of GPS. In the case of firefighters, for example, the system would allow directors on sight, or at a central location, to "see" where firefighters are located within a building, regardless of floor, and in environments not friendly to GPS, such as urban areas.

The project is being funded by the Binational Industrial Research and Development Foundation, an economic development group sponsored by the U.S. and Israel, which helps develop research and development cooperation between companies in the U.S. and companies in Israel. While the BIRD Foundation invests about \$11 million per year in such relationships, according to officials, the exact amount of funding for the InterSense project was not disclosed.

For InterSense, the deal has possibilities beyond pure technology development, according to CEO T.C. Browne.

### Nanotechnology-based engine oil lubricant helps reduce fuel consumption

ApNano Materials, Inc., a cleantech company and provider of nanotechnology-based products, announced that vehicle tests carried out by independent automotive test centers and car

fleets, including field tests of cars and heavy trucks, show that NanoLub, the company's proprietary nanotechnology-based lubricant, led to an enhancement in compression efficiency and a reduction of over 5% in fuel consumption of the vehicles. The tests found that NanoLub caused also a reduction in engine temperature and noise. Tests also showed that the NanoLub additivated oil did not harm the engine.

"The findings strengthen the results of many other experiments conducted in the last 7 years since the foundation of ApNano Materials," said Dr. Menachem Genut, ApNano Materials' President and CEO. "The experiments show that in addition to NanoLub's benefits in friction and wear reduction, the revolutionary lubricant directly reduces fuel consumption. These days when the prices of fuels are very volatile, NanoLub is a real contribution to energy saving as well as to the reduction in the emission of green house gases. NanoLub not only contributes to fuel economy but is also a real cleantech product."

NanoLub is based on nanosized particles of tungsten disulfide (WS<sub>2</sub>) that have a structure of nested spheres, called inorganic fullerenes, whose lubrication mechanism includes the layers slipping off under loads to form an adherent film that reduces friction and wear. When used as an additive to liquid oil or grease, NanoLub significantly enhances the lubricating properties of the oil or grease with respect to wear and friction by an order of magnitude versus the same lubricant without this additive. In addition, NanoLub "wraps" the moving parts with a lubricating thin film - called a tribofilm - and continues to lubricate normally for a long time, as an 'uninterruptable lubrication source' during severe oil leakages.

Companies currently distributing products formulated with NanoLub include ORAPI- a key French grease manufacturer for industrial applications with worldwide distribution channels; Luval S.A. - a major Chile-based lubricant producer for heavy industry and mining whose improved greases treated with NanoLub are in use in several copper mines in Chile; Sonol - an Israeli fuel company. Multisol is marketing NanoLub in Europe, Shima Trading, a large Japanese trading company is marketing the product in Japan and Tempo is marketing it in Canada. OPET, a Turkish fuel oil distribution

company owned by the Koc Group, with a network of over 1,300 service stations in Turkey is launching this Spring an add on product based on NanoLub.

“NanoLub has gained worldwide recognition for its successful performance and the great benefits for the end-user,” said Aharon Feuerstein, ApNano Materials’ Chairman and CFO. “Due to the growing demand, we have significantly increased our manufacturing capacity at our production plant.”

Numerous studies worldwide have shown the unique benefits of NanoLub. For example: a study carried out at the University of Newcastle in England found that NanoLub reduces gear wear by 5 - 6 times. Another example is a study carried out at the University of Stockholm where it was shown that the application of NanoLub on steel surfaces led to the formation of a protective film on the surface of the metal during work contact.

NanoMaterials, Ltd., is located in the high tech science park adjacent to the Weizmann Institute campus in Ness Ziona.

### **Cooperation agreement signed by Hebrew U. and French National Research Center**

A cooperative scientific agreement was signed between the Hebrew University of Jerusalem and the French National Center for Scientific Research (CNRS) — the largest scientific research center in Europe. The agreement establishes the European Associated Laboratory (LEA), entitled the France-Israel Laboratory of Neuroscience.

The agreement was signed at the Hebrew University in the presence of President of the Hebrew University Prof. Menachem Magidor, Vice-President of the Hebrew University for Research and Development Prof. Hillel Bercovier, President of the CNRS Prof. Catherine Brechignac, and Vice-President of the Victor Segalen University Prof. Alain Blanchard.

Prof. Brechignac said the new agreement serves “to strengthen the existing cooperative research” involving French and Israeli scientists who operate on a very high level and have shown great determination to succeed and to attain excellent results.

Asked for her reaction to the academic boycott of Israeli scientists heard in some quarters, Prof. Brechignac said that she is against such boycotts. “I believe in dialogue and explaining and not in boycotting. In science it is important to transcend all political differences; knowledge is universal,” she said.

Prof. Bercovier said that in 2004 the Hebrew University was the first institution in Israel to sign an academic cooperative agreement with CNRS.

That agreement was known as the France-Israel International Associated Laboratory Agreement and established the Franco-Israeli Laboratory of System Neurophysiology and Neurophysics.



That effort led to several collaborative joint research projects between scientists in the two countries, as well as to the first-ever French-Israeli binational neuroscience symposium -- first held in Israel in 2004 and now taking place biannually -- and to joint scientific publications. Prof. Bercovier noted the great importance of these cooperative efforts.

### **ISRO to launch Israeli satellite**

India’s space agency ISRO is set to launch an Israeli satellite next month. India has reportedly bought the satellite from Israel that will give it an edge in gathering data about weather as well as other sensitive information round the clock.

Indian and Israeli ties are becoming more vibrant and expanding at a rapid pace. Israel is set to replace Russia as the largest arms supplier to India. Last year amidst unprecedented secrecy, the Indian space agency - ISRO successfully launched an Israeli spy satellite.

It was launched from India’s regular launch site Sriharikota using India’s workhorse rocket, the PSLV. The launch was kept secret on Israel’s demand.

Not surprising, considering the TECSAR is capable of taking photos both in day and night and even in cloudy conditions, a technology used to spy on enemy movements. Although it was a commercial launch, it reflects the close strategic ties between Israel and India.

Defence ties between India and Israel have been on a real upswing with Israel supplying high tech radars to India and also upgrading the software used in Indian fighter planes but the government insists the launch was purely on commercial considerations.

ISRO is becoming an increasingly important space organization for countries across the world.

### M & A activity

2008 M&A activity involving Israeli high-tech companies that were either acquired or merged totaled \$2.64 billion in 84 deals. The number of deals approximated that of the two previous years (85 in 2007, 88 in 2006), while deal value decreased by 19 percent from that of 2007 and 74 percent from that of 2006. Average deal size fell more than 18 percent from \$38 million in 2007 to \$31 million in 2008.

### FDA approval for product to prevent cardiac adhesions

A material developed at the Hebrew University of Jerusalem that is designed to prevent adhesions (scar tissue) following surgery has led to approval by the U.S. Food and Drug Administration (FDA) of a product for use in pediatric cardiac surgery patients.

The product is the result of Prof. Daniel Cohn's invention of novel, tailor-made, biodegradable polymers for the prevention of post-surgical adhesions. SyntheMed Inc. of Iselin, N.J. in the U.S., received the technology from Yissum the Technology Transfer Company of the Hebrew University, and has now obtained FDA pre-market approval for the first product, REPEL-CV® Adhesion Barrier, for use in pediatric patients (21 and younger) who are likely to need secondary open heart surgery.

The generation of adhesions following heart surgery is of special concern, since they may affect cardiac function. Furthermore, in the frequent cases where repeat operations are required, adhesions obscure cardiac landmarks,

making the procedure potentially life-threatening to the patient due to inadvertent vascular or cardiac injury.

In the U.S., there are 350,000 to 400,000 children with congenital cardiac abnormalities. Many neonatal and infant patients must undergo multiple surgeries before their defect is corrected, while other children require additional operations as they grow. The REPEL-CV® Adhesion Barrier product gives physicians another tool to help decrease the complications that may occur during these surgeries. .

"I am very excited that the long process that started several years ago in our laboratory at the Institute of Chemistry of the Hebrew University with the design and synthesis of a family of biodegradable polymers was recently approved by the FDA," said Prof. Cohn. "This biomedical product harnessed the unique properties of a family of custom-made, biodegradable polymers aimed at treating a large, incredibly widespread clinical problem, which pertains to all surgeries: post-operative adhesions. Each and every surgery conducted inevitably results in post-surgical adhesions, and the polymeric film developed at the Hebrew University allows us to minimize those adhesions."



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