changing the game of Digital Conductive Printed Electronics
Disclaimer

This presentation contains forward-looking statements. All statements other than statements of historical fact contained in this presentation are forward-looking statements. In some cases, you can identify forward-looking statements by words such as “believe,” “continue,” “estimate,” “anticipate,” “expect,” “intend,” “plan,” “potential,” “project,” “seek,” “will,” as well as the negative of these words or other comparable terminology. These forward-looking statements include, but are not limited to, statements about: the potential market opportunities for commercializing our current and planned products; our expectations regarding the potential market size for our current and planned products; estimates of our expenses, future revenue, capital requirements, and our needs for additional financing; our ability to develop and advance our current and planned products; the implementation of our business model and strategic plans for our business and products; our ability to maintain and establish collaborations or obtain additional funding; our financial performance; and developments and projections relating to our competitors and our industry. These statements reflect our current views with respect to future events or to our future financial performance and involve known and unknown risks, uncertainties, and other factors that may cause our actual results, performance, or achievements to be materially different from any future results, performance, or achievements expressed or implied by these forward-looking statements. Factors that may cause actual results to differ materially from current expectations include, among other things, those listed under “Risk Factors” in the Registration Statement on form F-1 (Registration No.: 333-206723) filed with the U.S. Securities and Exchange Commission on September 22nd, 2015 by the Company. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Except as required by law, we assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future.
PV Nano Cell’s Sicrys™ inks family platform are THE Game Changers in Digital Conductive Electronics For mass production applications Addressing a $8B TAM
Digital Printing (Sicrys™ based) versus Analog Printing in the manufacturing of electronic devices – The Big change
How the things work Today?

Today electronic devices are produced mainly through mature analog production processes (e.g. conductors).

### Screen Printing
- Limited performance
- Expensive
- Contact printing
- Mainly silver pastes, expensive and limited performance

### Photolithography
- Many steps, mask, etching...
- Not additive process (not efficient)
- Expensive
- Large quantities of hazardous wastes

Both are difficult to implement in flexible, customized, 2.5D and 3D electronics.
Changing the world with **Sicrys™ inks and digital inkjet 3D printing**

**Inkjet Sicrys™ Printing**
Additive Manufacturing

**Digital process**
Non-contact
Low wastes

Allows for cost reduction

**Sicrys™ Inkjet Conductive Printing**

Creating New technology routes

Narrow pattern printing

3D Printed Electronics

PVN’s “complete solution” approach and Sicrys™ nano silver and copper inks are expected to be THE enablers for Digital Conductive 3D printing in mass production applications (quality, performance and costs).
Business model
Introducing Single Crystal conductive Nano inks low cost & high quality

Enabling Digital Conductive Printed Electronics mass production applications
“Complete Solution” approach

Integrated business model

- Targeting mass production applications
  - Application/customer, inks and equipment/process partnership.

- Providing “complete solution” to customers.

- Building & implementing the Graphics Art “HP model” in Printed Electronics (“razor blade” model)

- PVN will provide printers, process and inks to its customers:
  - Low capex for customers.
  - Expect to quickly build and expand PVN’s market share.
  - Better cooperation with equipment producers.
  - Printer producers will maintain the equipment.
Collaborations established to implement Sicrys™ and PVN’s “Complete Solution" approach

Licensed technologies from Fraunhofer (IKTS, Dresden Germany) – special particles for the solar cells metallization inks.

Signed cooperation agreement with leading print head producer – Xaar (UK).

Inkjet printer players

Leading print head players

Licensed technologies from Fraunhofer (IKTS, Dresden Germany) – special particles for the solar cells metallization inks.

Signed cooperation agreement with leading print head producer – Xaar (UK).
The following slide includes a hypothetical illustrative model of the expected costs and revenues to deploy the Company’s proposed “HP Model.” It is not intended to be a projection of the Company’s expected implementation of such model over any specific period. The model on the following slide was prepared by PV Nano Cell Ltd., an Israeli company (the “Company”), based on numerous assumptions, certain of which are summarized in notes to the model and should be carefully reviewed. The assumptions involve judgments by the Company with respect to factors which are difficult to predict and many of which are beyond the Company’s control. Because of the number and range of variables involved in making such model, there is no assurance that they will be attained. Any assumption may have an effect upon other assumptions and the ultimate result of the model. The accuracy of the model is dependent upon many factors, many of which are beyond the control of the Company, including, but not limited to the risk factors described in the Company’s registration statement on Form F-1 (Registration No. 333-206723) filed on September 22, 2015. The Company assumes no responsibility for the accuracy of the model.

THERE CAN BE NO ASSURANCE THAT THE MODEL CAN OR WILL BE REALIZED OR THAT ACTUAL RESULTS WILL NOT BE MATERIALLY DIFFERENT FROM THE MODEL.
# Illustrative HP Model

<table>
<thead>
<tr>
<th>Number of Printers</th>
<th>Printer Price ($M)</th>
<th>Total Cost ($M)</th>
<th>Year 1 Ink Sales ($M)</th>
<th>Year 2 Ink Sales ($M)</th>
<th>Year 3 Ink Sales ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.3-1</td>
<td>0.3-1</td>
<td>0.38-0.44</td>
<td>0.74-0.88</td>
<td>0.74-0.88</td>
</tr>
<tr>
<td>10</td>
<td>3-10</td>
<td>3-10</td>
<td>4-6</td>
<td>6-9</td>
<td>8-12</td>
</tr>
<tr>
<td>100</td>
<td>30-100</td>
<td>30-100</td>
<td>40-60</td>
<td>60-90</td>
<td>80-120</td>
</tr>
</tbody>
</table>

* See notes and assumptions on the following two slides
Notes and Assumptions:

The following is a description of the data and assumptions on which the HP model is based:

1) Sufficient printers are available, and can be obtained by the Company, at the cost indicated.
2) Sufficient demand exists, or will exist, for the number of printers reflected in the model.
3) The Company has sufficient capital to purchase the printers.
4) The model is based on two general applications, printed electronics (PE) and photovoltaic (PV).
5) First printer assumed to be lower throughput.
6) The model references only equipment costs and excludes other costs (e.g., corporate overhead).
7) PV
   a) Printer price ~ $0.8 - 1M
   b) Printer throughput of 50 MW and will utilize 50mg of ink usage per wafer
   c) Inks will be sold at a price of $1,700-$2,200 per kg (linked to silver bulk price of $515 per kg, for HIGH volumes).
8) PE
   a) Printer price ~ $0.3-0.5M
   b) Printer will have capacity to utilize 350 kg of ink per year
   c) Inks will be sold at a price of $2,100-$2,500 per kg (linked to silver bulk price of $515 per kg, for HIGH volumes).
9) Sales assumptions:
   a) First year refers to PO, installation and starting production (50% capacity).
   b) Second year refers to production ramp up (75% capacity).
   c) Third year represents all coming years at full production capacity.
10) First printer assumed installed beginning of year.
11) Multiple printer installations are spread through the year, with a quicker ramp-up in throughput.
Applications and Markets
Digital Conductive Printed Electronics mass production applications

Two target markets

PV – Photovoltaic (solar cells)
over $90 b market @2014; over $ 137 b in 2020 (inks ~ $ 4.9 b in 2014)

3D & PE – Printed Electronics, 2.5D, flexible and customized
over $8 b market @2014; over $ 40 b in 2020 (inks > $ 2 b)

One solution – Sicrys™ inks platform
Market #1 (PV)
Solar cells printing
Front metallization process

(Prevented to be THE FIRST Digital Conductive Printed Electronics mass production application)
Market outlook

Huge market that is only expected to grow

An over $90 b market
Expected to $137 b by 2020

All the forecasts predict substantial PV market growth for the next decade, assuming two digit growth in 2016

~$4.9 b Silver Pastes & Inks market

* Source: Adapted from NPD Solarbuzz Marketbuzz

The change in solar cells printing

Inkjet enhanced printing enabled by PVN’ Sicrys™ inks

- Expected costs savings of up to 70% silver
- Precise and narrow printing (higher performance and less shading)
- Potential increase cell efficiencies by 0.3% and up to 1% abs.

Future 50% silicon savings expected (low breakage)

Lowering costs ($/W) [by average > 15% wafer costs]

- [Potential future cost reductions allowing for reduced wafer thickness]

MBB set up

Lower printing costs may remove obstacles to Holy Grail – Grid Parity
Market #2
Printed Electronics (PE)
Flexible Applications Based on Printed Electronics Technologies

Anticipated applications landscape 2013 – 2020 +

Most Common Market Needs:

- **Low cost.**
- Flexible substrates compatibility.
- Environmentally friendlier technologies.
- Digital processes.
- High throughput.
- Additive manufacturing.
- Sicrys™ addresses all!

Security.
- RF shielding (RF – radio frequency).
- Touchscreens.
- RFID tags (Radio Frequency Identification).
- Sensors.
- Smart cards/labels.
- Advanced packaging.
- Antennas.

Data Source: Yole, May 2013
The global PE market

> $2B conductive ink market

Expected to reach $40 – 55B by 2020

An over $8B market

Global revenue by product type:

Data Source: IDTechEx
The change in Printed Electronics

Inkjet enhanced printing

Saves up to 50% of silver

Precise and narrow printing (higher performance and less shading)

Almost no wastes that need disposal

Lowering costs

Better market performance

Easier expansion into flexible electronics, customized electronics AND 2.5D & 3D printed electronics.
Sicrys™ Inkjet Printed samples

Solar Cells

Antenna

Flexible Electronics

Security box

Sensor

3D Electronics

Sensor

Antenna
Single Crystal conductive Nano inks
coupled with PVN’s complete solution approach
Sicrys™ inks a platform technology to enable wide range of digital conductive printing mass production applications

**The game changer:**

1. Sicrys™ inks are based on “new” nano metal particles.
2. Lower cost advantage.
3. Higher stability.
4. Robust printing (BEST in the market*).
5. High metal loading.

*Sicrys™ Silver & Copper solvent based inkjet inks.

* FujiDimatix PVN inks evaluation report (provided upon request).
Enhanced inkjet conductive inks

Nano Copper inks motivation:
Substantial cost savings (metal costs reduced to 1/80 – 1/100 in copper relative to silver based inks) without reduced performance.

Copper

Most common metal for conductive inks

PVN offers also Copper inks

Silver metal price

16.2$/oz


Copper metal price

0.18$/oz

Competitors (inks)

Sicrys™
The Best prices in the market
Competitors compared to PVN Sicrys™ selected competitors by field

- **Nano Silver solar cell metallization inkjet inks:**
  - No known competitor as of today.

- **Nano Copper inkjet inks**, (few competing products):
  - Novacentric & App Nano inks are copper oxide inks **not copper**.
  - Intrinsiq has a Nano copper ink (very high costs ~ $ 10/gr versus $ 8-10/gr ink for silver).

- **Nano Silver inkjet inks** selected competitors summary & PVN Sicrys™:

<table>
<thead>
<tr>
<th>Company</th>
<th>Metal</th>
<th>Resistivity (sintering conditions)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVN Sicrys™</td>
<td>30% to 60%</td>
<td>2 -30 μΩ·cm (240°C ; 100°C; laser, NIR &amp; photonic) – ≤ 9 μΩ·cm at 150°C available</td>
<td>Solvent based, thick 3D patterns, Best robust printing, low relative costs</td>
</tr>
<tr>
<td>Ulvac/Harima</td>
<td>20%-60%</td>
<td>2 -10 μΩ·cm (&gt; 300°C &amp; 150°C,)</td>
<td>PSD &lt; 4 nm, Toluene and Tetradecane solvents, high relative costs</td>
</tr>
<tr>
<td>Novacentrix (USA)</td>
<td>15-35%</td>
<td>2.8 – 18 μΩ·cm (photonic &amp; &lt; 125°C)</td>
<td>Less than 0.5 µm thick, water precursors chemistry</td>
</tr>
<tr>
<td>ANP (Korea)</td>
<td>30-35%</td>
<td>5 – 11 μΩ·cm (200°C - 100°C )</td>
<td>PSD &lt; 10 nm, high relative costs</td>
</tr>
<tr>
<td>InkTec (Korea) 049550 KS Equity</td>
<td>15 – 40%</td>
<td>2.8 – 4.8 μΩ·cm (350°C - 130°C )</td>
<td>Precursor chemistry (low thickness), high relative costs</td>
</tr>
<tr>
<td>Intrinsiq (UK)</td>
<td>20%</td>
<td>&lt;10 μΩ·cm</td>
<td>Very high relative costs</td>
</tr>
</tbody>
</table>
Intellectual Property

PVN IP Sicrys™ inks: Copper WO PCT/1B2015/051536 and Silver WO PCT/US2011/063459 patents submitted in:

- **UK**: 1020556.5 and 1403731.1 (Cu)
- **Russia**: 2013130145
- **Japan**: 100114775
- **Europe**: 11846848.7
- **China**: 201180063533.9
- **India**: 5064/CHENP/2013
- **Korea**: 10-2013-7015635
- **Brazil**: 112013013885.5
- **USA**: 13991905

**Additional IP**: Nano wires for Thin solar cells metallization:
- EP 2331727 (Licensed patent from TAU, national phase & granted in Europe).
- WO 2013/128458 (A joint patent application with TAU).

**IP general** (sono chemistry – nano materials – owned by subsidiary NZE):
- USA 7,157,058; USA 7,504,075; IL 144638; IL 149932.
Company
**About PV Nano Cell Ltd.**

PV Nano Cell Ltd. (PVN) is a provider of digital inkjet printing solutions, best known through its Sicrys™ family of customized single crystal nanometric conductive inks.

PVN offers a new alternative to traditional methods of mass production of conductive patterns (electronics) through inkjet conductive printing.

**Sicrys™ nano metal ink family.**

**Production line in place.**

**Investing efforts to start commercializing the technology.**

<table>
<thead>
<tr>
<th><strong>Company Name</strong></th>
<th>PV Nano Cell Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Status</strong></td>
<td>To begin trading on the OTC when registration process is complete</td>
</tr>
<tr>
<td><strong>Headquarters</strong></td>
<td>Migdal HaEmek, Israel</td>
</tr>
<tr>
<td><strong>Total Employees</strong></td>
<td>12</td>
</tr>
<tr>
<td><strong>Founded</strong></td>
<td>2009</td>
</tr>
<tr>
<td><strong>Reporting/Listing Status</strong></td>
<td>The Company is subject to the reporting requirements of the SEC. An independent market maker is in the process of preparing an application to initiate quotations for the Company’s shares in the OTC. F-1 is effective.</td>
</tr>
</tbody>
</table>
The team

Management team:

Dr. Fernando de la Vega
Founder, CEO & Director
Entrepreneur & 30 years’ industrial management experience, PhD in Applied Chemistry. (Hebrew Univ.)
2001 – 2009 Cima NanoTech (General Manager, R&D and Operations Manager);
2003 -2009 Chairman NFM consortium (developed Nanotechnologies infrastructure in the Israeli Chemical Industry, $ 30 M budget);
1993 – 2001 Tosaf Compounds (Operations VP, R&D and QA Manager);
1984 – 1993 Chemada (R&D and Lab Manager)
In addition: consultant work, created R&D consortiums, > 10 publications & > 10 patents and patent applications.

Meni Biran
VP Sales and Marketing
More than 25 years of experience in the high-tech industry. Established 2 companies which were successfully sold. In the last 10 years deeply involved in international sales and business development. From 2014 Galtronics - Director of Sales; 2009-2014 Infinite Memory - V.P. of Sales; 2007-2009 Integration Inc. -European Director of Sales; 2002 – 2007 Z.B.Tronics Ltd. – Founder & Managing Director (in Sept. 2007 sold the company to UR Group), 1988-2002 EBV ELEKTRONIK Israel General Manager - Built the first Global Distributor in Israel, 1995-1988 Maintronics Ltd –Founder & General Manager. (in Oct. 1988 sold the company to EBV Electronik).

Norberto Grunstadt
Operations VP
A highly-skilled and professional engineer with over 30 years of multi-national project and plant management experience gained in food, plastics and the oil industry. Operations Vice President in leading industries: Genigar, Pazkar, and others. Served as Project Manager for the establishment of production facilities in Mexico and Israel.

Zvika Lifscitz
CFO
CFO with 20 years experience in multi-national high-tech industry (public and private – Valens, Tessera, Resolute and Shiron), with broad experience in strategic planning, growth execution, investor relations, M&A, turn around, fund raising from international investors, leading teams, operations, taxation, US GAAP and incentive plans.
thank you

Join us!

fernando@pvnanocell.com

www.pvnanocell.com

+972-54-5599061
© PV Nano Cell Ltd
November 2015