

# Weekly Discovery

We SHARE to inspire and ignite ideas!

22 January 2018 - 26 January 2018



## SPECIAL FEATURE By SUTD LIBRARY

### Wood As A Construction Material

Wood has great potential as a construction material due to its robustness, light weight, eco-friendly attributes and capabilities of being prefabricated for building applications (Wimmers, 2017). Today Europe is “leading the way in tall timber projects”, found in a study by the Council on Tall Buildings and Urban Habitat (CTBUH, 2017). In this reading list, we look at the timber construction market, analysis of wooden materials, timber prefabrication possibilities, environmental advantages of wood-based buildings, and recent developments in wooden architecture. The list contains over 40 resources mostly published within the past 5 years and aims to offer insights from various reliable sources, including associations, journals, book titles, and more.

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### 3D METAL PRINTING

#### This Gorgeous Titanium Brake Caliper Was 3D Printed

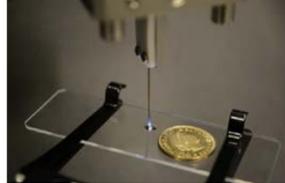


The complex titanium brake caliper took 45 hours to 3D-print using more than 2000 layers of titanium powder. This first of its kind prototype is also 40% lighter than aluminium alloy calipers and considerably stronger too.

Source: [Popular Mechanics](#) (23 January 2018)

### 3D PRINTING - MICROSTRUCTURES

#### Ultra-Thin Optical Fibers Offer New Way to 3-D Print Microstructures



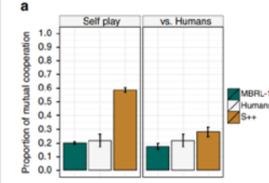
New hair thin optical fibers can be used to 3D print micro- or nano-scale 3D structures that facilitate the adhesion and growth of cells to create engineered tissue that restores damaged tissues.

Read also at [OSA](#).

Source: [EurekAlert!](#) (17 January 2018)

### ARTIFICIAL INTELLIGENCE

#### Cooperating with Machines



Machine-human cooperation is now possible, facilitated by intuition and emotions, through the use of simple algorithmic mechanisms. This allows for cooperation in a variety of 2-player repeated stochastic games (RSGs).

Source: [Nature Communications](#) (16 January 2018)

### BIONICS

#### E-Skin Lets You Manipulate Objects in Real and Virtual Worlds



Through magnetic-field sensors and permanent magnets, this [device](#) enables users to interact, by using mere gestures, with everyday objects and in augmented reality applications.

Also read more at [Science](#).

Source: [IEEE Spectrum](#) (19 January 2018)

### CONSUMER TRENDS

#### Top 10 Global Consumer Trends for 2018



Understand the 10 groups that are driving consumption in 2018. One group, the “Clean Lifers”, live minimalist lifestyles due to their experience with recessions, wars and threats of terrorism while growing up.

Source: [Euromonitor](#) (January 2018)

### DATA ANALYTICS

#### A Data Driven Approach to Identifying Future Leaders



Image Source: Britannica

Data being used in identifying leadership skills, strengths and weaknesses of an individual. It also helps in individual assessment and development.

Source: MIT Sloan Management Review (Summer 2017)  
Available @ SUTD Library (Call Number HD28 MIT)

### ENERGY

#### The Energy Industry Outlook, from 2017 to 2018

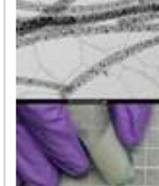


Innovation and disruptions in the energy sector are well underway. Check out the potential trends that will dominate the energy industry in 2018.

Source: [Power Technology](#) (17 January 2018)

### FUEL CELLS

#### Making Fuel Cells for a Fraction of the Cost



With the use of electrospinning technique, sheets of carbon nanofibers form nanoparticles which catalyse into high-performance low-cost graphitic carbon. Read also at [Wiley](#).

Source: [Science Daily](#) (22 January 2018)

### GENETICS DISORDERS

#### Will You Be Among the First to Pick Your Kids' Genes?

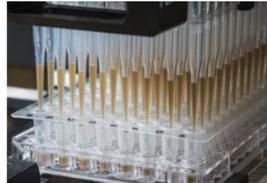


Learn how one start-up is developing the capability to predict health disorders, weight, height and even skin tone of a human being by using an embryo and applying a combination of models and DNA tests on it.

Source: [MIT Technology Review](#) (Jan / Feb 2018)

### HEALTHCARE

#### A Cheap and Easy Blood Test Could Catch Cancer Early



A major advancement in [liquid biopsy technology](#) only requires a blood sample to identify eight common types of cancer. Machine learning is also employed to detect specific affected areas inside the body. Also read more at [Science](#).

Source: [MIT Technology Review](#) (18 January 2018)

### HEALTHCARE

#### Smart Medicaid: Leveraging Cognitive Technologies to Improve Health and Program Efficiencies

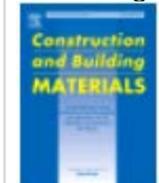


In this [report](#), gain an overview of integrated technologies that provide a cohesive framework to deliver improved patient care with lower cost. Practical tips on getting started on implementation of a smart Medicaid system.

Source: [Deloitte](#) (17 January 2018)

### MATERIALS

#### Interactions of Fungi with Concrete: Significant Importance for Bio-Based Self-Healing Concrete

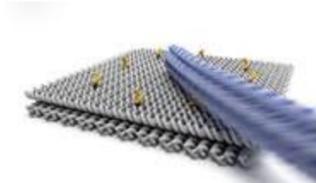


This study shows positive results in the use of fungi in concrete materials, which reacts with water and oxygen in the air, germinates and forms hyphal mycelium which helps fill cracks in buildings. A sustainable self-healing material.

Source: [Construction and Building Materials](#) (10 March 2018)

### NANOROBOTICS

#### Fast Computer Control for Molecular Machines



This novel electric propulsion technique uses an electric field control system to develop nanobots made of DNA that are a hundred thousand times faster than the current technologies. Also read at [Science](#).

Source: [Phys.org](#) (19 January 2018)

### SOUND WAVES

#### Synopsis: Trapping Large Objects with Sound



A new [acoustic trap](#) can ‘trap’ objects as big as 16mm and move them via sound waves. This breakthrough can potentially be applied to medical procedures such as removal of kidney stones. Also read more at [APS](#).

Source: [APS Physics](#) (22 January 2018)

### TECHNOLOGY

#### Top 10 Emerging Technologies of 2017



Here are the emerging technologies in 2017 which are forecasted to impact the global economy and our everyday lives. Are you ready to embrace these innovative disruptions?

Source: [Scientific American](#) (December 2017)  
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### WATER MANAGEMENT

#### The World's Largest Water Reserve Is Being Built Under a Desert



The biggest artificially desalinated water reserve on the planet hides 262 feet under the Liwa Desert and is stored in 315 wells to provide the locals with 100 million litres of water daily.

Source: [Architectural Digest](#) (17 January 2018)

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