



SFU News

## RESEARCH

# SFU alumnus pokes holes in Euro Cup tickets to increase security

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Soccer fans attending the Union of European Football Associations' Euro 2016 Football Championship in France should take a careful look at their tickets.

Counterfeit tickets have long plagued sporting events and the Euro Cup is no exception. Official ticket sales are only available through UEFA's website but unofficial sites claim to have tickets ranging from €900 to €5000 (\$1300 to \$7000 Canadian) or more.

To crackdown on counterfeiting, UEFA has taken extensive measures to ensure that official tickets are impossible to replicate. One of these security measures is a colourful hologram-like image developed by **Nanotech Security Corp.** and Simon Fraser University alumnus Clint Landrock.

As an applied science graduate student, Landrock studied the optical effects of nano-structures—holes 1,500 times thinner than a human hair that can trap wavelengths of light and allow for a wide array of colours.

With help from SFU's **4D LABS**, a materials research institute with nano-fabrication and nano-imaging technology, Landrock developed unique anti-counterfeiting security technology and, in 2014, sold the company he co-founded with SFU's professor Bozena Kaminska to Nanotech Security Corp., joining them as chief technology officer.

The 2016 Euro Cup tickets feature a KolourOptik image of UEFA's 'Super Victor' mascot. The vivid image uses no ink but instead reflects light through more than two billion nano-sized holes.

"With the structures that Nanotech Security Corp. is producing, you need advanced equipment to make it and to see that you've made it properly," says Nathanael Sieb, director of operations at 4D LABS.

"We have all of that cutting-edge equipment under one roof, which allows Nanotech Security Corp to do all their work in one location and keep their devices clean without the risk of contamination."

"4D LABS has really enabled the research that I wanted to do," says Landrock.

Creating the hologram-like image is an intensive process, he says. First, the digital image is converted into a special file type that is then used to create a master mold. That mold is then sent to a secret production facility to print the millions of Euro Cup tickets.

While Landrock won't be attending the Euro Cup, he is excited that Nanotech Security Corp. has a significant role in enhancing the security of one of soccer's largest tournaments.

In addition to the EUFA Euro Cup tickets, Landrock says, Nanotech Security Corp. works with international banks and governments to create authentication and security features for currency, passports and identification cards.

"There are no limits to the type of images we can produce," he says.