"It's a game-changer for wearable electronics and 3D printing."

Becky Stern, *Director of Wearable Electronics*
Adafruit, New York, NY

Adafruit, founded in 2005 by MIT engineer, Limor "Ladyada" Fried, has been using NinjaFlex® 3D printer filament since its launch in October 2013.

"We spotted some flexible 3D prints online and searched around for a supplier with the right filament for our MakerBot® Replicator 2," notes Pedro Ruiz, creative technologist at Adafruit. The Adafruit team chose NinjaFlex TPE 1.75mm filament to create an iPhone® bumper-style case as a test print.

The bumper case took 25 minutes to print and used about five percent of a .50kg (standard) spool of NinjaFlex filament. Adafruit techs printed the phone bumper on a Replicator 2 with a spring-loaded extruder at 230°F, 45 (extrude)/150 (travel speed) with excellent results, and only minor cleanup needed.

Adafruit has also used NinjaFlex to create LED diffusers for wearable applications. "White NinjaFlex diffuses our NeoPixels beautifully, and it's easy to attach to garments and accessories by sewing or gluing," states Becky Stern, director of wearable electronics at Adafruit. Noé Ruiz, Adafruit creative technologist adds, "We made some spiky designs for punking up a jacket, or dressing up like an illuminated dinosaur."

Adafruit releases all of its project files online for anyone to build; the Adafruit team feels their designs have resonated with their curious, passionate community of makers. Adafruit Cyberpunk Spikes and Stego Spike Hoodie tutorials are the most popular flexible prints to date.

Noé Ruiz & Pedro Ruiz,
Creative Technologists, *Adafruit*

Stern recommends NinjaFlex for wearables because it blends with textiles better than hard plastics. Prints are soft and flexible, not pointy or dangerous to wear. The creatives at Adafruit believe the new NinjaFlex filament has great potential for costuming, and is a game-changer for wearable electronics and 3D printing.

NinjaFlex®

FLEX YOUR 3D IMAGINATION.