

# Firewall with Nano-Helix PUFs for Fiber-Optic Communication

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## **Abstract**

Complex Nanostructures deposited on transparent substrates with techniques such as Glancing Angle Deposition (GLAD) can be inserted into a fiber-optic cable to create unique patterns similar to DNA helices that can be exploited as Physically Unclonable Functions (PUFs). The resulting PUFs can act as a real "firewall" protecting communications through fiber-optic cables with challenge-response-pair (CRP) authentication. The trusted cables within Cyber-Physical-Systems (CPS) can be part of the cryptographic architecture securing the network.