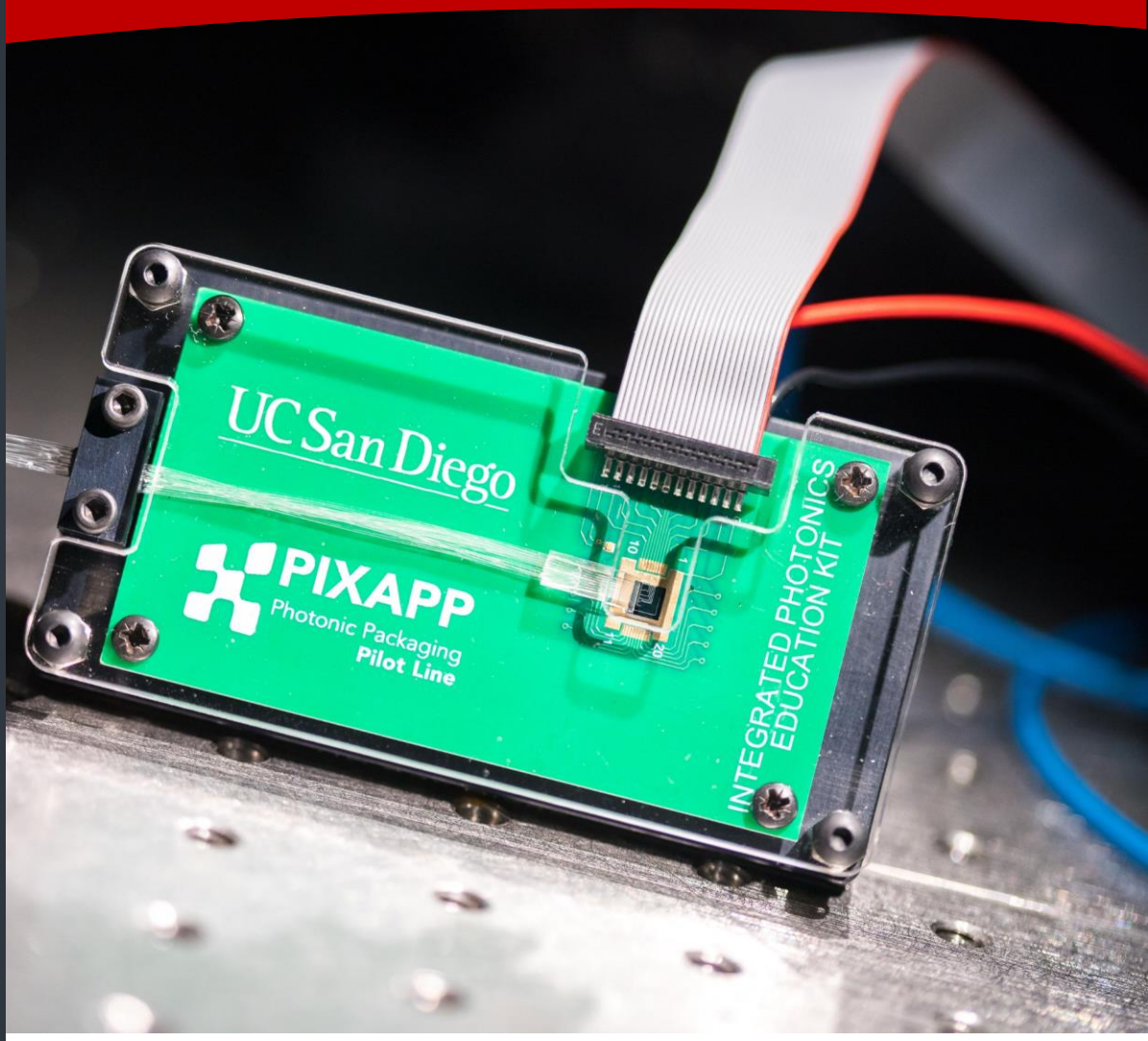
Integrated Photonics Educational Kit



WHAT IS INTEGRATED SILICON PHOTONICS?

A technology that integrates many optoelectronic devices and optical functions into a low-cost silicon chip. Silicon photonics is rapidly evolving into a multibillion-dollar commercial market.

OUR VISION

Engage and train college students by providing an experimental introduction to integrated photonics and bridge the gap between the silicon photonics industry/research labs and classes.

OUR MISSION

Bring a cost-effective way integrated silicon photonics technology directly to the classroom.

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The first hands-on toolkit to train future technicians and engineers in silicon photonics

Integrated Photonics Education Kit (IPEK) is the first plug & play didactic toolkit that introduces hands-on experimental integrated photonics for education institutions. IPEK is addressing the lack of hands-on experience of college students in integrated photonics technology and PIC deficiency by offering a cost-effective solution. IPEK will encourage students and instructors participating in STEM education to have a user-friendly and affordable access to integrated photonics. IPEK allows students to experimentally analyze the basic building blocks and concepts taught in integrated photonics classes.

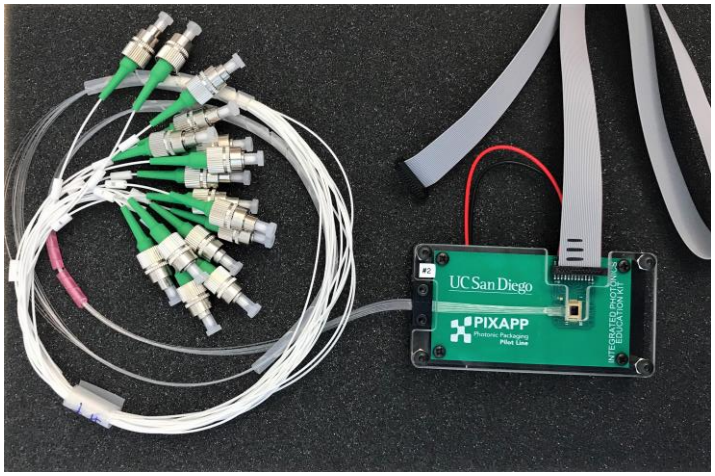
The uniqueness and novelty of IPEK is that it is a packaged silicon photonic platform of devices and circuits designed for educational purpose to help instructors to convey experimental concepts and provide hands-training for students.

IPEK Description

IPEK is easy to use and has a robust optical & electrical packaging that includes:

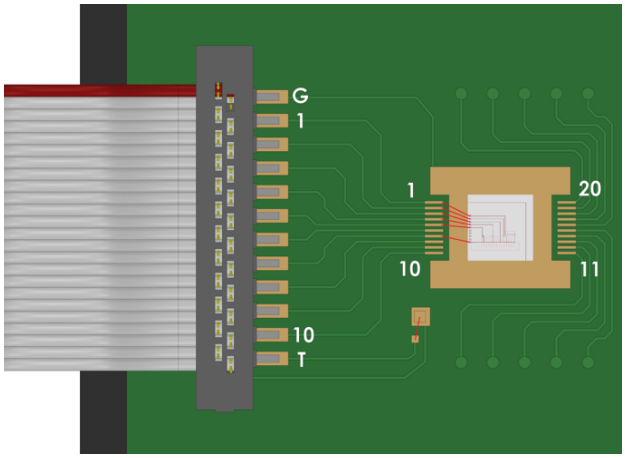
- Stand-alone building blocks and which can be externally fiber connected to each other
- Optical functionalities (filtering, modulation, etc…)
- Includes resistive heating elements for tunable silicon devices
- Peltier cooler and an integrated temperature sensor in the PCB board

Fiber to chip mapping



Fiber #	Device
1	Strip waveguide Input
2	Input Ring
3	Through Ring
4	Add Ring
5	Drop Ring
6	Directional Coupler In 1
7	Directional Coupler Out 1
8	Directional Coupler Out 2
9	Directional Coupler In 2
10	Bragg cavity In
11	Bragg cavity Out
12	Simple Bragg In
13	Simple Bragg Out
14	MZI in
15	MZI out
16	Strip waveguide Output

Chip to ribbon mapping



Ribbon Cable #	Device
1	PCB Ground
2	PCB Ground
4	MZI
6	Bragg waveguide
8	Bragg cavity
10	Directional coupler
12	Add-Drop ring resonator
16	PIC Ground
23	Thermistor
24	Thermistor

Maximum voltage allowed in wires: 5V

Suggested laboratory tools:

Laser and/or broadband source, photodiode, AWG, oscilloscope, fiber components, OSA