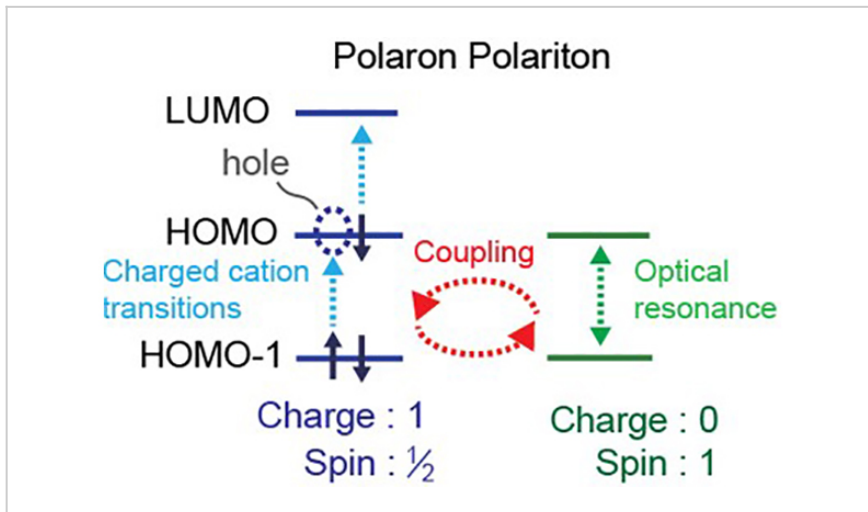


# Charged Polaron Polaritons in Organic Semiconductors

ID# 2017-4660



Polaron Polariton

## Technology Summary

This technology incorporates polaron polaritons in optical transistors, which can be used with fiber optics. Polaron polaritons are quasi particles made up of a photon and an excited atom. While polaron polaritons are known to exist in optical transistors, this invention is the first that allows polaron polaritons to subsist in optical transistors at room temperature. These quasi particles are useful because when two polaritons collide, there's an increase in non-linearity between photons. Typically non-linearity is observed only at high light intensities such as those provided by lasers, but polaron polaritons lower this threshold. Essentially, light could be controlled using an electric field. Accordingly, the invention allows for light to be re-emitted without the need of high power lasers. The application of this technology includes interfacing computer chips with optical fiber.

## Application & Market Utility

The field of fiber optics in the telecommunications industry is experiencing rapid growth and consumers are continuing to demand high bandwidth. The telecommunications arena is expected to have a global market of \$1.582 billion in 2022. The major trend driving the market is miniaturization and improved communication capabilities. This invention has the potential to meet these demands, with applications in the telecom, defense, aerospace, and electronics industries.

## Next Steps

This technology is patent pending. The research team seeks collaboration for future development and licensing opportunities.

### TECHNOLOGY READINESS LEVEL

1-3

#### Seeking

Investment | Licensing | Research

#### Keywords

- polaron polariton
- organic semiconductor
- charged polaron
- anion
- cation

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