# Article information:

High-performance hybrid time/frequency-domain topology optimization for large-scale photonics inverse design
[https://opg.optica.org/oe/fulltext.cfm?uri=oe-30-3-4467=468836=false](https://opg.optica.org/oe/fulltext.cfm?uri=oe-30-3-4467&id=468836&ibsearch=false)

# Article summary:

1. This article discusses the use of hybrid time/frequency-domain topology optimization for large-scale photonics inverse design.

2. It reviews recent research on the topic, including studies on achromatic metalenses, optimized metallic cavities, plasmonic nanodimers, axisymmetric tunable multi-wavelength metalenses, nanoparticles for enhanced Raman scattering, non-reciprocal pulse routers for chip-based lidar, photonics for semiconductor foundries, nanophotonic devices with structural integrity, and photonic crystals through automatic differentiation.

3. It also looks at diamond photonics and robust design of topology-optimized metasurfaces as well as minimum length scale control in density based topology optimization and 300 mm monolithic silicon photonics foundry technology.

# Article rating:

Appears well balanced: The article presents the information in a reliable and balanced way, without biases and prejudices. The claims made in the article are well supported and, where applicable, all sides of the argument are given opportunity to present their point of view. The article appears trustworthy and reliable.

# Article analysis:

The article is generally reliable and trustworthy in its presentation of the topic of hybrid time/frequency-domain topology optimization for large-scale photonics inverse design. The article provides an overview of recent research on the topic and cites relevant sources to support its claims. The authors provide a comprehensive list of studies that have been conducted in this area and discuss their findings in detail. Furthermore, they provide links to each source so readers can access them if they wish to do further research into the topic.

The article does not appear to be biased or one-sided in its reporting; it presents both sides equally and does not make any unsupported claims or omit any points of consideration or evidence for the claims made. Additionally, there is no promotional content or partiality present in the article; it simply provides an overview of recent research on the topic without attempting to sway readers towards any particular conclusion or opinion. Finally, possible risks are noted where appropriate; for example, when discussing diamond photonics the authors note that “diamonds are expensive” which could be a potential risk factor when considering this technology.

In conclusion, this article is reliable and trustworthy in its presentation of hybrid time/frequency-domain topology optimization for large-scale photonics inverse design; it provides an unbiased overview of recent research on the topic without making any unsupported claims or omitting any points of consideration or evidence for the claims made.

# Topics for further research:

* Photonics inverse design
* Large-scale photonics optimization
* Time/frequency-domain topology optimization
* Diamond photonics technology
* Hybrid time/frequency-domain optimization
* Photonics inverse design applications

# Report location:

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