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## **GIST College student Yoon Gyu Lee publishes an SCI paper as first-author**

- GIST (President Moon Seung Hyeon) College (Dean Do-Kyeong Ko) junior Yoon Gyu Lee, who is majoring in physics, published a paper entitled "Theoretical study of photonic bands of one-dimensional photonic crystals containing epsilon-near-zero metamaterials" in the *Journal of Physics: Condensed Matter* (IF: 2.617) as the first-author with Dr. Chul-Sik Kee from the Advanced Photonics Research Institute (APRI, Director Hyyong Suk).
- Yoon Gyu Lee participated in G-SURF \*, a summer research program for GIST College students, at APRI and studied the theoretical properties of photonic crystals \*\* consisting of ENZ metamaterial \*\*\* in integrated optics.

\* G-SURF (GIST Summer Undergraduate Research Fellowship\_: A research program at GIST College that benchmarked the Summer Undergraduate Research Fellowship (SURF), a summer university research participation program in Caltech that has been held annually during every summer vacation since 2011, and has attracted the attention of many students.

\*\*\* Photonic crystal: A material that periodically arranges two or more different materials with different permittivities.

\*\*\* ENZ (epsilon-near-zero) metamaterial: A material whose dielectric constant is close to zero and is a structure that has characteristics that can only be created in nature through artificial design.

- In the paper, the photo-band gap in existing light crystals (high-reflectivity frequency domains) is typical of decreasing frequency with increasing frequency, but the photo-band gap in light crystals made of ENZ meta-materials increases with increasing frequency, suggesting new applicability of ENZ meta-materials.
- The advising professor Dr. Chul-Sik Kee said, "I hope there will be many opportunities for undergraduate students and researchers from the Advanced Photonics Research Institute to work together in the future, and students who are interested in optical research are always welcome."
- GIST College student Yoon Gyu Lee said, "Through this nice opportunity with G-SURF, I was able to find interesting topics that I enjoyed studying. I strongly recommend participating in G-SURF to other students who want to know what research is like."

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