조세례요한(CHO, SERYEYOHAN)

한동센빛연구실(Handong Intense Laser Lab.)
(+82) 10-4137-8291 ◇ seyocho@gmail.com, sycho@handong.edu, 21439001@handong.edu

EDUCATION

Handong University *2014 – present*
(Expected 2020) Ph.D. in Engineering, Photonics
A Study of Thermal Effects and Consequent Spatio-temporal Beam Distortion of High-average-power Solid-state Lasers

Handong University *2009 – 2014*
Dual B.S., Mechanical Engineering & Electrical Control Engineering

RESEARCH PROJECTS

The Competency Development Program for Industrial Specialist (Laser&Optical application)
레이저,광응용 산업 인력 양성 사업 2019–present
funded by Ministry of Trade, Industry and Energy

CHF and contact angle change by laser shock peening
레이저충격피닝에 의한 임계열유속과 접촉각의 변화 연구 2018–present
funded by National Research Foundation, Rep. of Korea

Development of transparency and wavefront distortion measurement system for ceramic laser medium
광학간섭계를 이용한 투명도 및 파면왜곡도 측정장치 개발 2018–present
funded by Korea Institute of Material Science

Development of 125 J·Hz laser system for laser peening
표면개질용 125 J·Hz급 레이저 개발 2014–2018
funded by Ministry of Trade, Industry and Energy

[**Undergraduate Research**]

Development of a Vibration absorber for vehicle(Avante XD)
차량용 진동흡수체 개발 2012–2013
funded by Hyundai Motor Company

Safety Analysis of Ultimate Heat Sinks of CANDU reactor
중수형 원자로 감속재의 열수력 분석 2011–2012
funded partially by Foundation of Nuclear Safety and Ministry of Education, Science and Technology

SKILLS

Computer Languages *MATLAB, Mathematica, Python, Julia*

Software & Tools *LabView, CodeV, SolidWorks, AutoCAD*

Languages(English) Academic writing experiences

ACADEMIC EXPERIENCES

Mathematics Teaching Assistant at Handong University
Calculus, Multivariate Calculus, Differential Equations and Their Applications, Engineering Mathematics, and Linear Algebra

Mechanical Engineering Teaching Assistant at Handong University
Mechanical Vibration, and Automatic Control

RESEARCH INTEREST

- Laser Physics and Engineering: High-power lasers, Ti:sapphire Lasers
- High Energy Laser Application: LTPS, EUV generation, Laser Shock Peening
- Nonlinear Effects, Beam Propagation/Forming, Beam-shape Visualization

PUBLICATIONS

Journal Papers

8. J. Jeong†, **S. Cho**†, S. Hwang†, and T. J. Yu, "Modeling and Analysis of High-Power Ti:sapphire Laser Amplifiers–A Review," Appl. Sci. 9(12), 2396 (Jun. 2019).
7. J. Jeong, **S. Cho**, S. Hwang, and T. J. Yu, "Amplified spontaneous emission suppression of saturable absorber in nanosecond double-pass laser amplifier," Jpn. J. Appl. Phys. 58(2), 020901 (2019).
6. J. Jeong, **S. Cho**, S. Hwang, and T. J. Yu, "Frequency-Modulated Pulse-Amplification Method for Reducing Pulse Shape Distortion," J. Korean Phys. Soc. 73(11), 1637–1643(2018).
5. **S. Cho**, J. Jeong, S. Hwang, and T. J. Yu, "Thermal lens effect model of Ti:sapphire for use in high-power laser amplifiers," Appl. Phys. Express 11, 092701 (2018).
4. S. Hwang, J. Jeong, **S. Cho**, J. Lee and T. J. Yu, "Femtosecond laser pulse distortion in Ti:sapphire multipass amplifier by atomic phase shifts," J. Korean Phys. Soc. 71(10), 652—656 (2017).
3. J. Jeong, **S. Cho**, T. Kim, and T. J. Yu, "Numerical extension of Frantz-Nodvik equation for double-pass amplifiers with pulse overlap," Opt. Express 25(4), 3946–3953 (2017).
2. **S. Cho**, J. Jeong and T. J. Yu, "Jones calculus modeling and analysis of the thermal distortion in a Ti:sapphire laser amplifier," Opt. Express 24(13), 14362–14373 (2016).
1. J. Jeong, **S. Cho**, T. Kim, and T. J. Yu, "Numerical Study of a Thermally-compensated High-energy Double-pass Nd:YAG Amplifier Design," J. Korean Phys. Soc. 68(5), 653–657 (2016).

Patents

4. 자연 증폭 방출 억제용 포화 흡수체를 가지는 고체 레이저 장치
   Solid state laser apparatus having saturable absorber for suppressing amplified spontaneous emission
   J. Jeong, **S. Cho**, S. Hwang, and T. J. Yu
   KR: 10-2018-0086145(pending)
   US: (pending) EU: (pending)
3. 레이저 펄스 필터 및 이를 구비한 레이저 출력 장치
   Laser Pulse Filter and Device for Emitting Laser having the Same
   T. J. Yu, J. Jeong, T. Kim, **S. Cho**, and S. Hwang
   KR: 10-1884417(issued Jul. 26, 2018)
   US: 16-317034(pending) JP: (pending)

2. 어레이 타입 레이저 증폭 장치
   Device for Amplifying Array Rod Type
   T. J. Yu, T. Kim, **S. Cho**, J. Jeong, and S. Hwang
   KR Patent: 10-2017-0050346(pending)

1. 레이저 증폭장치
   Laser Amplifier
   T. J. Yu, J. Jeong, J. Kim, and **S. Cho**
   KR: 10-1739839(issued May 19, 2017)
   US: 15-568792(pending)
   CN: 2015800791759(pending)

Conferences (Selected)

8. **S. Cho** and T. J. Yu, "Pulse propagating simulation using Hermite transform to analyze degradation of spatio-temporal shape induced thermal effects," Optics and Photonics Congress 2018(Busan, 2018. 08. 27–29).

7. **S. Cho**, T. Kim, S. Hwang, J. Jeong, J. Kim, and T. J. Yu, "Analysis on thermal effects of distributed laser medium," 2017 Optical Society of Korea Winter meeting(Jeongseon, 2017.02.15.–17.).

6. **S. Cho**, and T. J. Yu, "Analytical solution for thermally induced beam deformation in laser amplifier: Thermal depolarization and thermal lensing," 2016 Optical Society of Korea Summer Meeting(Busan, 2016.07.11.–13.).

5. **S. Cho**, S. Hwang, H. Shin, K. Lee, and T. J. Yu, "A study on a spatio-temporal deformation induced by the thermal stress in Ti:sapphire," 2016 Optical Society of Korea Winter Meeting(Daejeon, 2016.01.20.–22).

4. **S. Cho**, and T. J. Yu, "A study of the high-repetition rate PW scale Ti:sapphire amplifier design to minimize thermal depolarization effect," 2015 the Korean Physical Society Fall Meeting(Gyeongju, 2015.10.21.–23).

3. **S. Cho**, S. Hwang, and T. J. Yu, "Pre-pulse from the nonlinar interference of tail-shape pulse after main pulse," ALTA 2015(Jeju, 2015.5.6.–9.)

2. **S. Cho**, J. Jeong, and T. J. Yu, "Thermally induced post-pulse tail in Ti:sapphire medium for ultrahigh power laser amplifier," 2015 the Korean Physical Society Spring Meeting(Daejeon, 2015.4.22.–24)

1. **S. Cho**, J. Jeong, and T. J. Yu, "Thermal depolarization Losses on Ultra-high power Ti:sapphire Laser amplifier," 2015 Optical Society of Korea winter meeting(Daejeon, 2015.1.28.–30.).