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THE INTERNATIONAL SOCIETY  
FOR OPTICS AND PHOTONICS

# OPTICS & PHOTONICS GLOBAL SALARY REPORT **2023**



# Introduction

The Optics and Photonics Global Salary Report provides a reference for employees, students, and managers interested in understanding compensation across the career landscape: How does my pay compare with that of my colleagues? To what degree are my colleagues working from home versus in person in labs or offices? What can I expect to earn in industry versus academia? The report addresses these questions and a variety of other issues across 14 topical sections, drawing on original research conducted by SPIE.

SPIE delivers the report each year, free of charge, as part of its mission as a not-for-profit educational society supporting the science and application of light. The report builds on data from over 5,500 individuals in 101 countries<sup>1</sup> who shared career information in a short online survey. This is the 13<sup>th</sup> annual survey and report, the largest such study in the optics and photonics community.

Unless otherwise noted, all results are based on full-time workers. For a complete list of participant countries and other details on survey methodology, please see Methodology and Endnotes on page 23.



## Key findings:

- The median salary for all full-time employees grew from \$78,644 last year to \$80,000 this year, an increase of 1.7%.<sup>2</sup>
- Early in the pandemic many workers shifted to remote work, but this shift has mostly been reversed, with 71% working most or all of time in their labs, offices, or other face-to-face workplaces.
- Salaries paid in euro are up 15% versus last year, and have increased 27% since 2011. Since last year, growth for other main currencies has been nearly flat or flat, with US dollar salaries increasing 4%, pay in Chinese yuan and Japanese yen flat, and earnings in British pounds decreasing 3%.
- The highest-paid discipline is aerospace, with a median income of \$122,721. Aerospace has held the top spot for all 13 years that the survey has been conducted.
- Median salaries are 19% higher overall for men than for women, \$83,255 versus \$69,000.
- Most full-time workers surveyed identify as engineers (65%). Within this group, 60% have engineering degrees and are working as engineers, 24% have engineering degrees but are not working as engineers, and 16% work as engineers without having engineering degrees.
- The most popular engineering degrees are electrical (25%) and optical (19%), with mechanical (12%) falling in third place.
- The largest proportion of engineers focus their work on optical engineering (41%), followed by electrical (10%).
- Startups account for just over 14% of workers at for-profit organizations. These workers earn median salaries of \$80,173, versus \$106,519 for those at traditional companies.
- Almost two-thirds of student respondents are working towards a PhD (64%), followed by 20% pursuing master's degrees, and 12% seeking a bachelor's degree.

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IS AN AMAZING FIELD  
TO BE INVOLVED IN.”**

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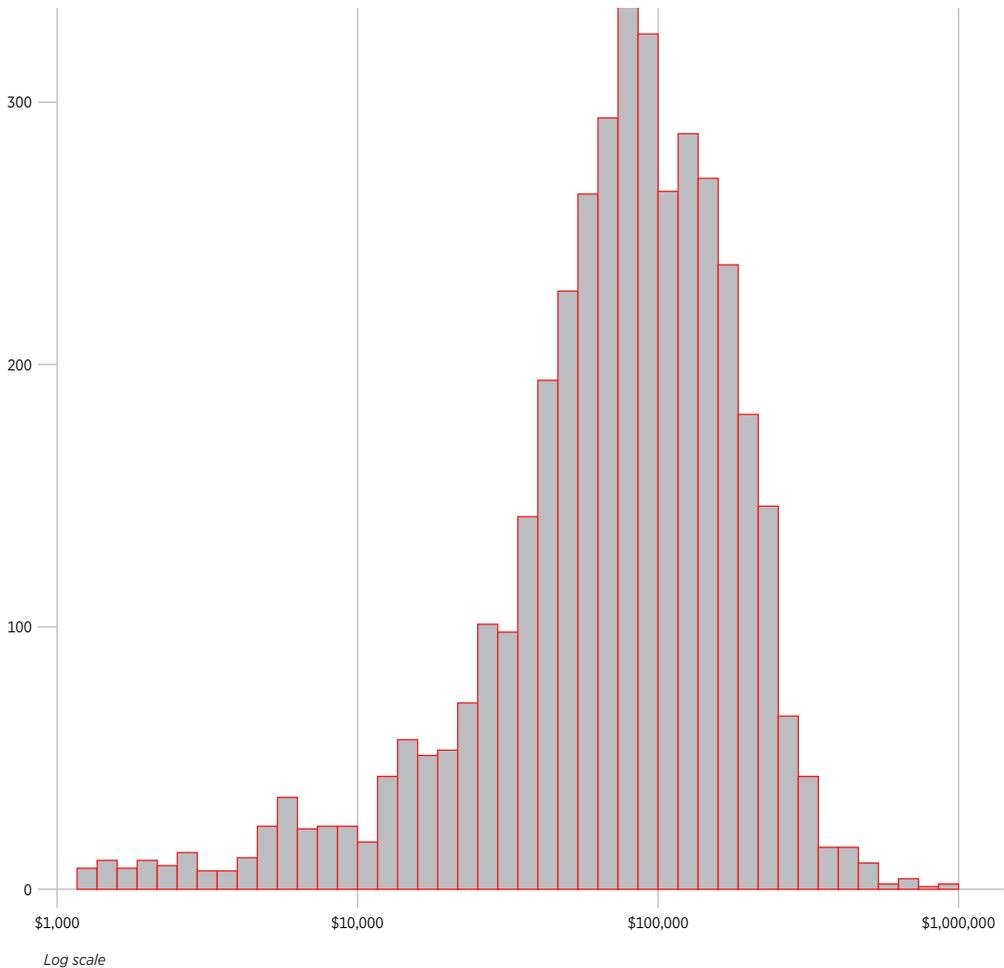
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# Distribution of Full-time Salaries

Full-time salaries cluster around the median of \$80,000, with half of respondents paid between \$44,746 and \$135,000. The overall distribution of pay is very wide, with 5th percentile workers earning \$9,382 while those at the 95th percentile earn \$245,000.



## Data Overview

### Full-time Salary Summary Statistics

Mean = \$99,566  
Median = \$80,000

- 5th percentile = \$9,382
- 25th percentile = \$44,746
- 75th percentile = \$135,000
- 95th percentile = \$245,000
- 99th percentile = \$380,000

$n = 4,047$

### Response Demographics

5,568 Valid responses

4,047 Full-time employees

242 Part-time employees

533 Employed students

796 Students

127 Unemployed

93 Retired

4,094 Men

1,241 Women

# Country Overview

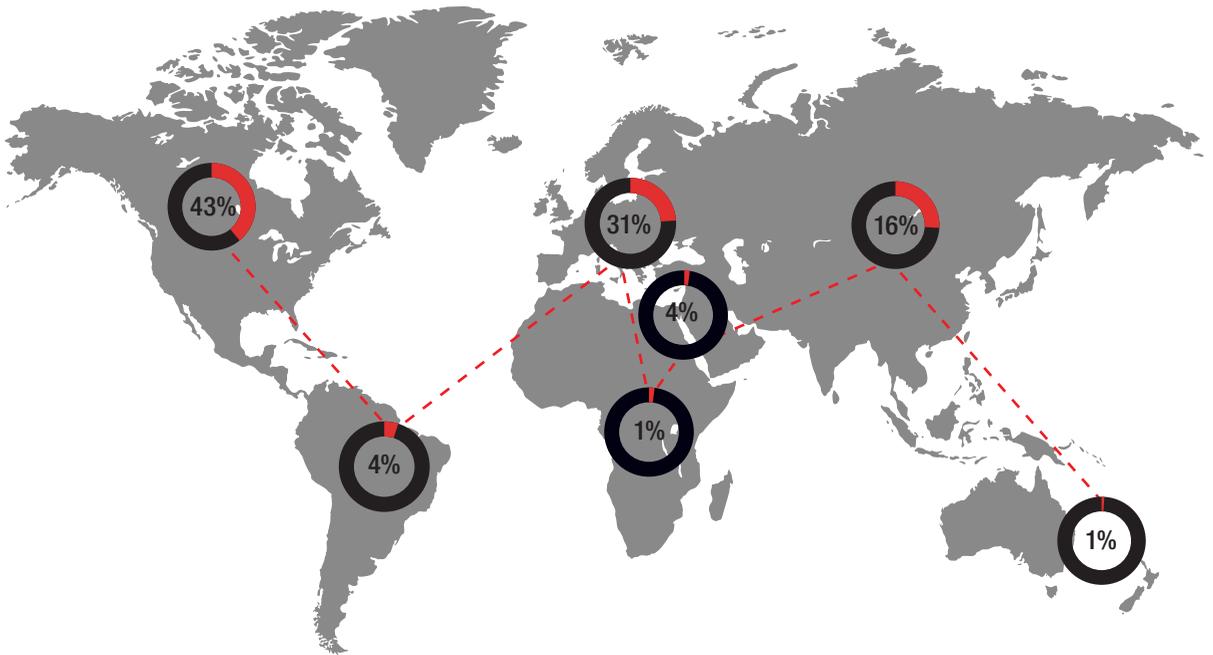
Workers in Israel, Switzerland, and the United States enjoy the highest median salaries. Workers at for-profit organizations earn more than their colleagues in academia in most of the countries listed.

## Median salary for full-time workers, overall, for-profit, academic, and government/military employers

Country	All	For-profit	Academic	Government/ military
Israel (n=46)	\$139,714	\$148,268		
Switzerland (n=46)	\$136,625	\$140,128	\$118,570	
United States (n=1676)	\$135,000	\$150,000	\$102,000	\$135,000
Australia (n=27)	\$90,640	<b>\$113,300</b>	\$85,147	
Singapore (n=35)	\$89,891	\$97,382		<b>\$82,400</b>
Germany (n=237)	\$83,085	\$96,932	\$65,366	\$74,030
Netherlands (n=72)	\$79,889	\$79,889	\$75,628	<b>\$82,618</b>
Denmark (n=20)	\$77,235	\$105,112	<b>\$71,553</b>	
Canada (n=121)	\$74,376	\$74,376	\$63,220	\$81,814
Belgium (n=26)	\$73,498	\$93,204	\$64,361	
South Korea (n=92)	\$71,760	\$79,733	\$65,780	\$66,976
Chile (n=15)	\$71,000		<b>\$68,342</b>	
Japan (n=141)	\$68,094	\$69,985	\$68,768	\$60,528
Sweden (n=16)	\$64,623	<b>\$62,723</b>	<b>\$83,155</b>	
Austria (n=18)	\$63,911	\$63,911	<b>\$63,487</b>	
Finland (n=33)	\$61,781	\$67,639	\$51,129	
Taiwan (n=50)	\$58,694	\$73,368	\$32,608	
United Kingdom (n=215)	\$57,352	\$70,143	\$50,793	\$53,817
France (n=69)	\$56,455	\$67,107	\$55,390	\$55,177
Lithuania (n=21)	\$52,833	\$58,585		
Portugal (n=22)	\$48,999	<b>\$74,563</b>	\$47,933	
Spain (n=77)	\$42,608	\$45,803	\$42,608	\$36,003
Italy (n=141)	\$41,681	\$47,933	\$39,305	\$40,477
Peoples Republic of China (n=173)	\$36,521	\$43,825	\$29,216	\$43,825
Czechia (n=24)	\$35,488	\$37,706	<b>\$32,294</b>	<b>\$36,597</b>
Poland (n=25)	\$27,224	<b>\$26,998</b>	\$29,493	
Brazil (n=57)	\$25,191	\$20,000	\$26,718	<b>\$28,626</b>
Mexico (n=31)	\$20,870		\$20,870	\$36,522
Colombia (n=17)	\$19,609		\$19,609	
Russia (n=61)	\$16,805	\$33,804	\$20,006	\$10,348
Turkey (n=51)	\$14,710	\$19,187	\$12,791	\$28,514
India (n=125)	\$14,574	\$13,918	\$12,145	\$18,218
Egypt (n=16)	\$5,886	<b>\$23,000</b>	<b>\$4,599</b>	

Table includes all countries with a sample size of 15 or more full-time workers. Minimum cell sample size is 5 respondents, with gold numbers indicating sample size of 5-9. The "All" column shows median salary for all full-time workers. The for-profit, academic, and government columns represent the subsets within those types of organizations.

## Survey responses by region

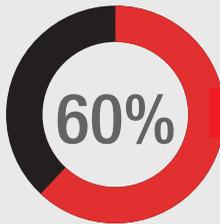


**“OPTICS HAS A GREAT FUTURE.  
MAKE SURE YOU DON'T SHY AWAY  
FROM ASKING THINGS YOU DON'T KNOW.”**

# Engineers in Optics and Photonics

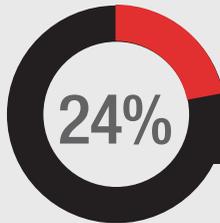
**65% of full-time workers identify themselves as engineers**

*Within this group:*



Have degrees in engineering and work as engineers.

**\$90,773**



Have degrees in engineering, but are not currently working as engineers.

**\$75,659**



Currently work as engineers, but do not have a degree in engineering.

**\$95,876**

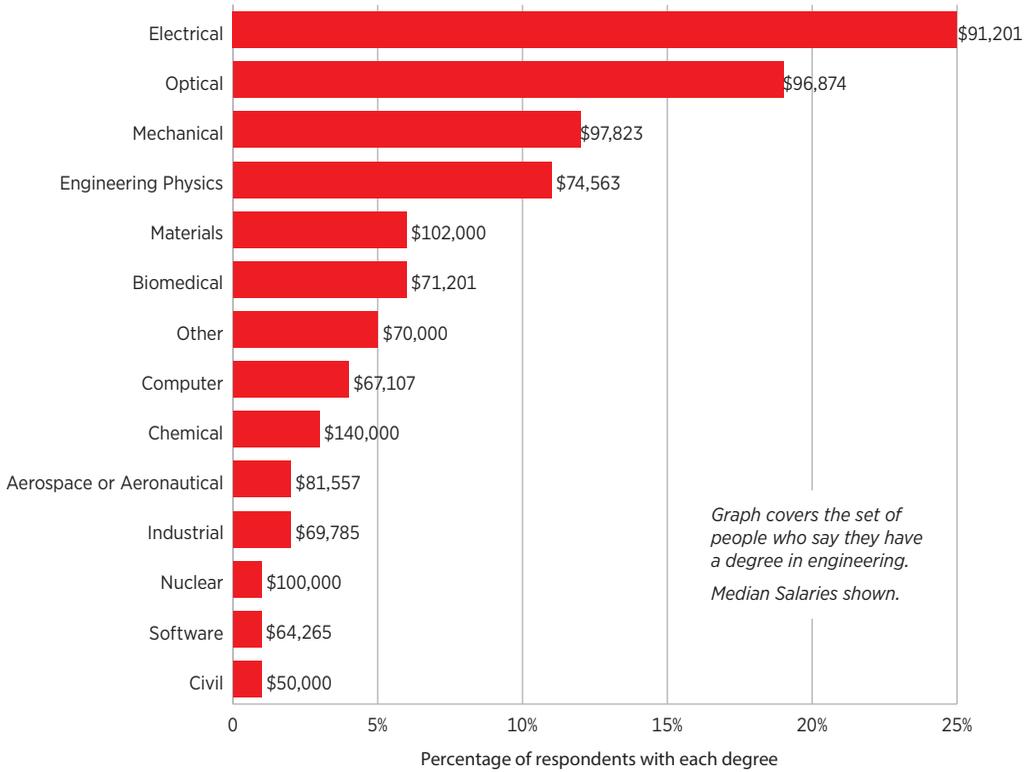
**67%** of people working as engineers without degrees in engineering have degrees in physics, followed by 9% with degrees in astronomy, and 5% with chemistry degrees.

*Median salaries shown.*

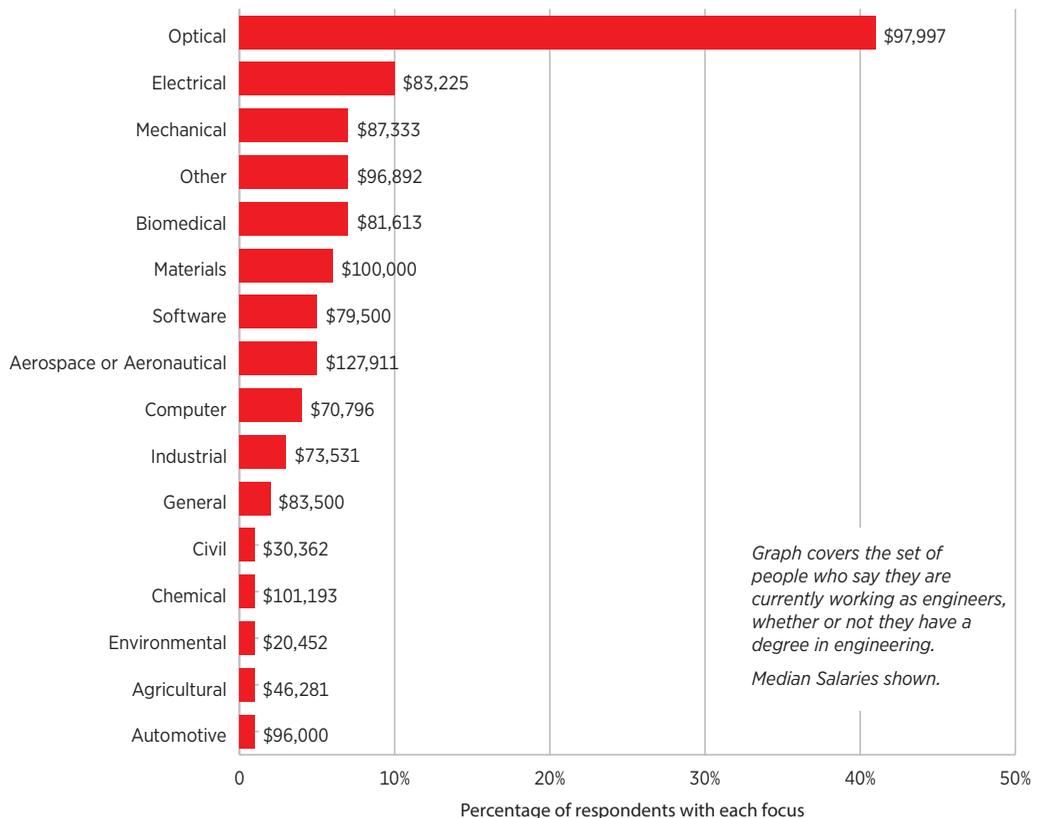


Photo credit: Getty Images, Inok

## What type of engineering degree do you have?



## What type of engineering is your main focus?

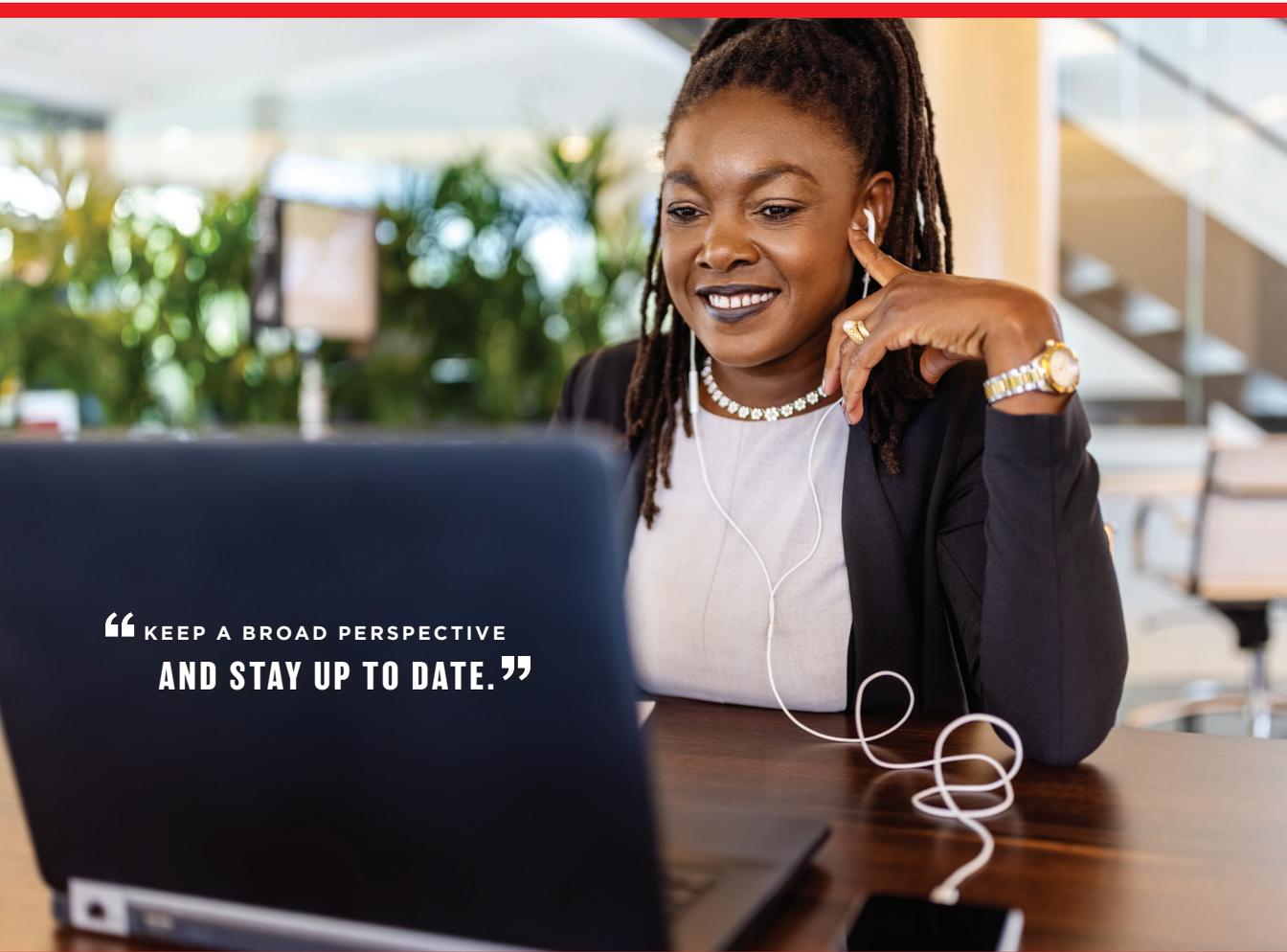


# Remote Work

The COVID-19 pandemic created a shift to remote work in our community. Two years ago, when the workplace impact of the pandemic was strongest, 40% of survey respondents worked half or more of their hours remotely. One year ago, 26% of employees worked remotely half or more of the time, while currently that number has declined to 13%.

## What proportion of your work hours did or do you spend working remotely versus in an office, lab, or other workplace with colleagues?

	100% Remote	Mostly Remote	About Half and Half	Mostly Workplace	100% Workplace
Two years ago	17%	23%	17%	22%	22%
One year ago	8%	18%	22%	30%	21%
Currently	4%	9%	16%	37%	34%



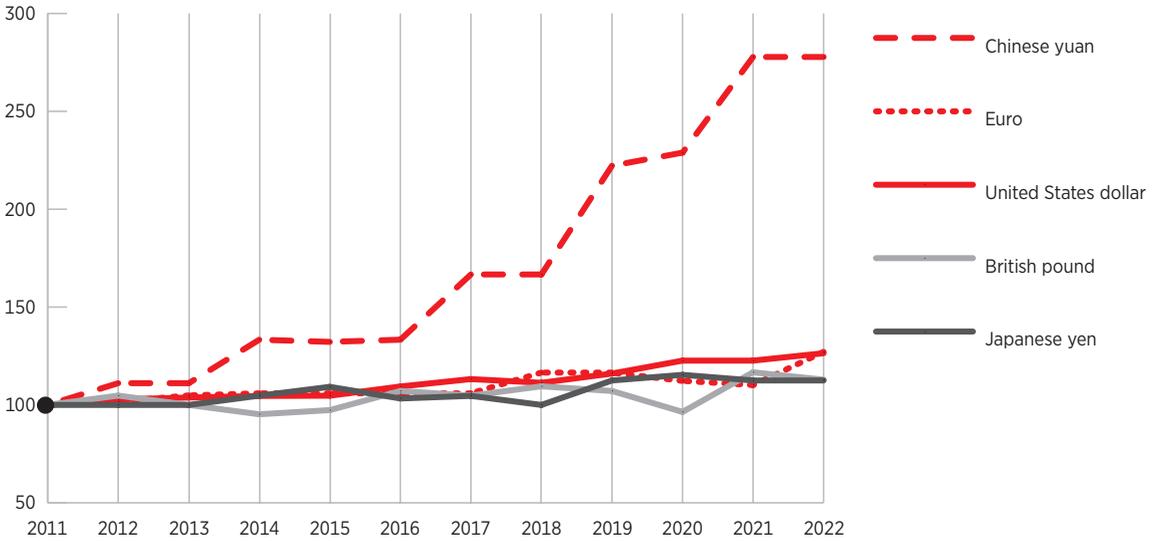
“KEEP A BROAD PERSPECTIVE  
AND STAY UP TO DATE.”

Photo credit: Getty Images, Luis Alvarez

# Wage Growth

Salaries paid in euro and U.S. dollars were up in 2021, 15% for euro and 4% for dollars. There was no change in median salary paid in Chinese yuan or Japanese yen, while earnings in British pounds decreased 3%. Over the thirteen years that this survey has been conducted, median salaries in each of these five currency groups have increased 13% or more, with wages paid in Chinese yuan increasing the most, rising 178% since 2011.<sup>3</sup>

**Change in median salaries, 2011-21, main currency groups**



**Growth in median salaries, 2011-2022, main currency groups**

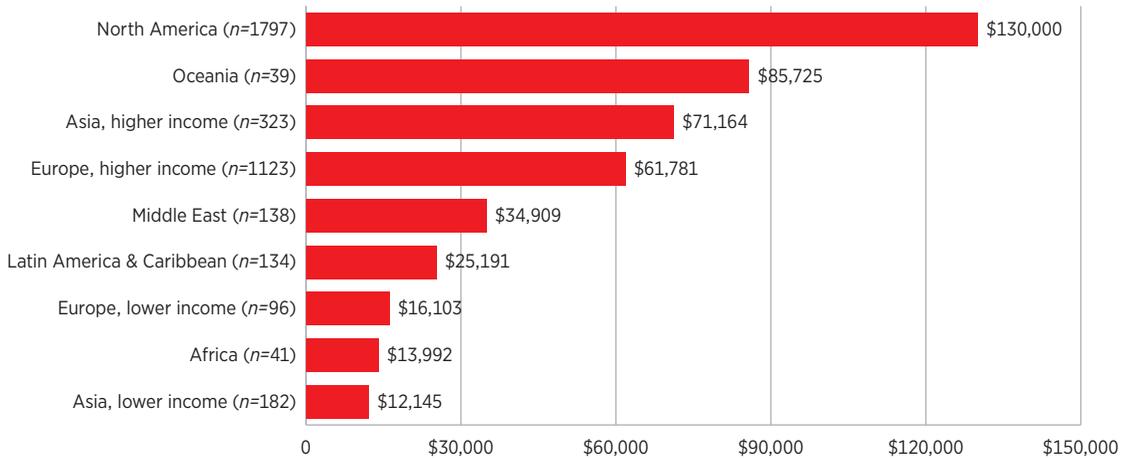
	2011 Median Salary	2021 Median Salary	2022 Median Salary	Growth 2021-2022	Growth 2011-2022
Chinese yuan	¥90,000	¥250,000	¥250,000	0%	178%
Euro	€47,200	€52,000	€60,000	15%	27%
United States dollar	\$106,000	\$130,000	\$134,000	4%	26%
British pound	£42,000	£49,000	£47,423	-3%	13%
Japanese yen	¥8,000,000	¥9,000,000	¥9,000,000	0%	13%

**“FIND AN AREA THAT YOU CAN BE PASSIONATE ABOUT AND STICK WITH IT.”**

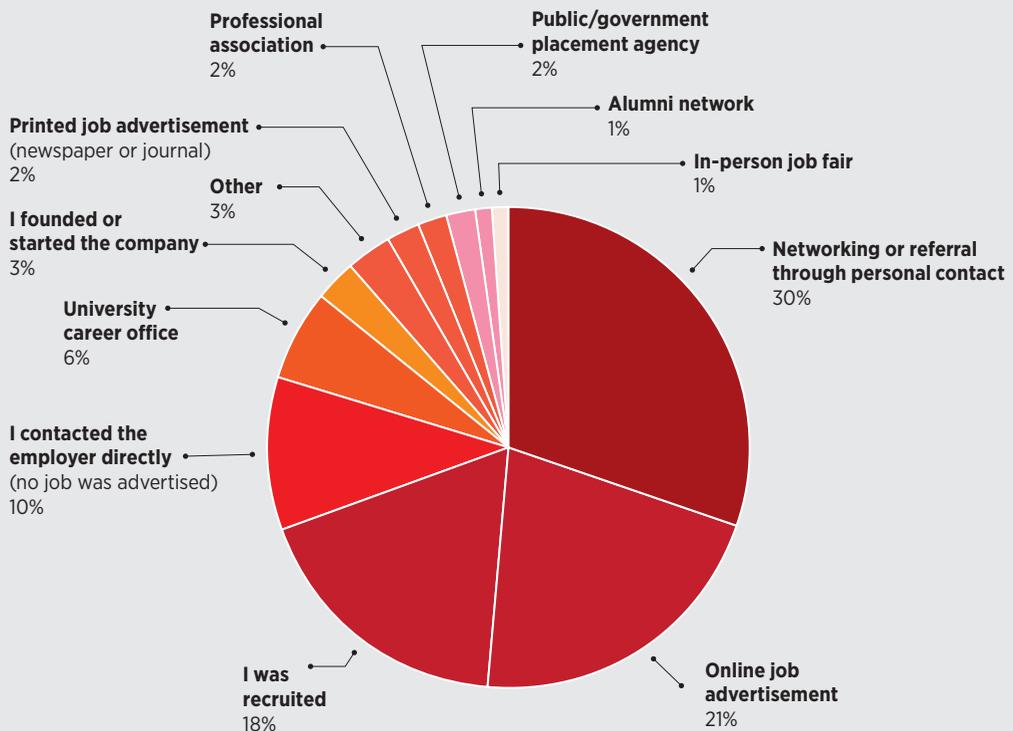
# Region

North America, Oceania, and higher-income Asia stand out as the regions with the highest salaries.<sup>4</sup> A large portion of regional income gaps is explained by the level of economic development of countries within each area.<sup>5</sup>

### Median salary by region



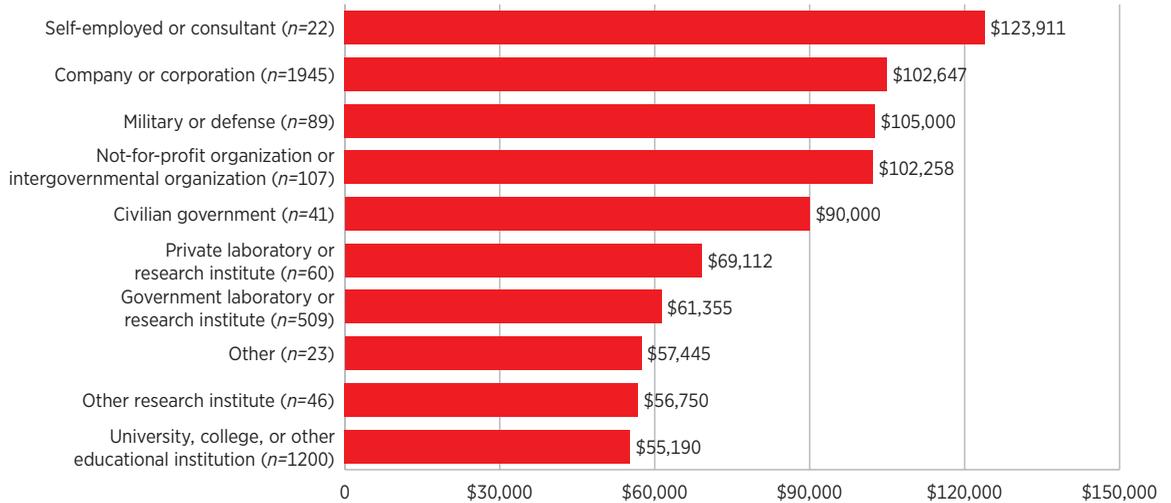
### “How did you find your original position at your present employer?”



# Employer Type

Median salaries are greatest for self-employed/consultants, company/corporation, and military/defense. Universities, colleges, and other educational institutions pay the least.<sup>6</sup>

## Median salary by employer type



## Median salary by region: Academic, government/military, and for-profit employers

Region	Academic	Government/ military	For-profit
North America	\$100,000	\$130,000	\$150,000
Oceania	\$82,682	<b>\$76,200</b>	<b>\$103,193</b>
Middle East	\$13,324	\$28,514	\$102,647
Asia, higher income	\$68,094	\$67,773	\$75,659
Europe, higher income	\$53,259	\$51,448	\$74,563
Europe, lower income	\$16,557	\$11,038	\$32,401
Africa	\$9,978	<b>\$10,893</b>	\$23,661
Latin America & Caribbean	\$26,361	\$33,305	\$21,947
Asia, lower income	\$11,809	\$14,678	\$12,145

*Gold numbers indicate sample size of 5-9.*

Startups account for just over 14% of workers at for-profit organizations. These entrepreneurs earn median salaries of \$80,173 versus \$106,519 for their colleagues at traditional companies.

## Median salaries at startup versus traditional companies

	Percentage of Respondents	Median Salary
Traditional companies	86%	\$106,519
Startup companies	14%	\$80,173

*The question was seen by respondents indicating "Company or corporation" or "Private laboratory or research institute" for organization type.*

# Career Stage

## Median salary by years employed for selected countries

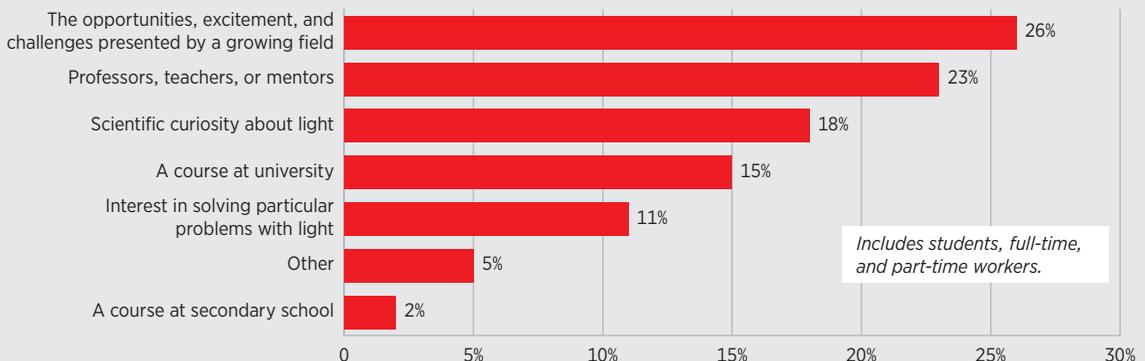
	India	Turkey	Russia	Peoples Republic of China	Italy	Spain	France	United Kingdom
Less than one year	\$8,016	\$6,556		\$21,912	\$25,564			\$40,756
1-2 years	\$6,850	\$5,330		\$24,834	\$34,619	\$29,639		\$42,328
3-5 years	\$11,902	\$14,656	\$13,798	\$29,216	\$30,890	\$37,282	\$39,944	\$50,793
6-10 years	\$17,610	\$15,030	\$34,494	\$51,129	\$37,282	\$36,216	\$50,064	\$53,355
11-15 years	\$18,218	\$28,780	\$20,006	\$32,138	\$41,079	\$45,270	\$48,999	\$68,886
16-20 years	\$21,861		\$10,971	\$36,521	\$44,738	\$55,390	\$63,911	\$59,863
21-25 years	\$31,577	\$31,978	\$24,146	\$124,170	\$56,455	\$57,520	\$76,694	\$80,060
26-30 years					\$62,846		\$64,976	\$74,980
More than 30 years	\$14,574		\$15,867	\$103,598	\$74,563	\$68,172	\$172,500	\$89,493

Blank cells result from sample size below 5 respondents. Gold numbers indicate sample size of 5-9. Countries are ordered ascending left to right by overall median full-time salary.

## Median salary by years employed and organization type category

	Academic	For-profit	Government/military
Less than one year	\$37,188	\$62,161	\$53,076
1-2 years	\$47,933	\$63,206	\$39,299
3-5 years	\$50,793	\$80,346	\$65,051
6-10 years	\$51,982	\$85,532	\$66,695
11-15 years	\$52,656	\$100,887	\$53,386
16-20 years	\$71,760	\$106,519	\$72,144
21-25 years	\$81,806	\$138,474	\$90,343
26-30 years	\$95,867	\$150,000	\$140,000
More than 30 years	\$105,923	\$160,000	\$90,343

## What most inspired you to pursue optics, photonics, or a related field?



Taiwan	Japan	South Korea	Netherlands	Germany	Singapore	United States	Switzerland	Israel
				\$68,172		\$99,000		
\$26,412		\$32,691		\$53,259		\$80,000		
	\$51,070	\$36,741	\$57,520	\$63,911		\$102,000	\$96,203	\$102,647
\$91,302	\$56,745	\$67,773	\$64,444	\$77,386	\$71,164	\$116,500	\$118,570	\$84,684
	\$64,310	\$71,760	\$92,671	\$90,754	\$101,128	\$130,000	\$150,907	\$153,971
\$76,628	\$75,659	\$95,680	\$106,519	\$97,358	\$97,382	\$140,000	\$155,219	\$105,499
\$74,998	\$75,659	\$79,733		\$101,193	\$198,510	\$170,000	\$167,076	\$149,694
	\$83,225	\$95,680	\$136,877	\$121,431		\$180,529		
	\$75,659	\$103,653	\$111,845	\$98,530		\$180,000	\$150,907	\$199,592

## Median salary by years employed and region

	Asia, Lower Income	Europe, Lower Income	Latin America & Caribbean	Middle East	Europe, Higher Income	Asia, Higher Income	North America
Less than one year	\$7,651				\$33,185	\$40,477	\$90,000
1-2 years	\$6,680		\$18,922	\$6,396	\$35,938	\$42,608	\$75,000
3-5 years	\$11,173	\$13,798	\$15,652	\$24,924	\$51,826	\$51,129	\$100,000
6-10 years	\$13,360	\$25,000	\$24,809	\$45,302	\$65,216	\$58,585	\$114,000
11-15 years	\$17,610	\$17,937	\$26,634	\$47,950	\$69,443	\$66,540	\$129,000
16-20 years	\$15,852	\$13,074	\$37,214	\$61,351	\$75,703	\$68,172	\$140,000
21-25 years	\$21,188	\$19,443	\$37,084	\$52,310	\$81,520	\$85,215	\$160,000
26-30 years	\$32,792	\$20,696	\$95,314	\$60,038	\$87,008	\$95,867	\$175,000
More than 30 years	\$12,656	\$14,487	\$32,157	\$108,350	\$79,442	\$85,215	\$180,000

Blank cells result from sample size below 5 respondents. Gold numbers indicate sample size of 5-9.

I WAS INSPIRED TO PURSUE OPTICS, PHOTONICS,  
OR A RELATED FIELD BECAUSE:

“Star Wars in 1977”

“Internship opportunity in optics at a company while I was a student”

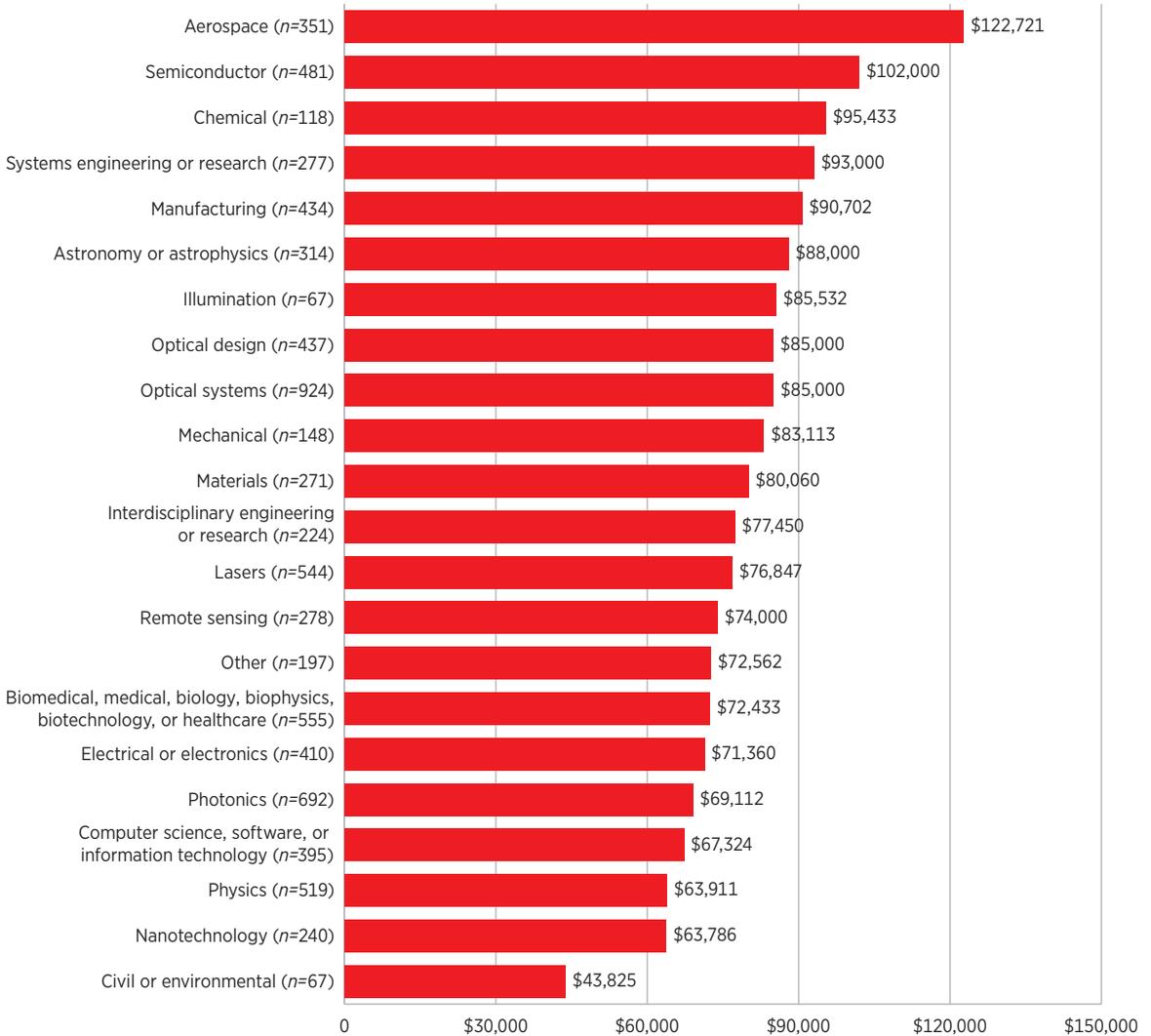
“The beauty of laser light”

“Independence and freedom, curiosity and room to explore.”

# Discipline

Aerospace and semiconductor disciplines enjoy the highest median earnings, at \$122,721 and \$102,000, respectively. Civil or environmental salaries are the smallest, with a median salary of \$43,825.

**Median salary by primary discipline**



The two most important factors driving salary gaps across disciplines are employment sector and country income level. The highest-paying disciplines have much higher representation at for-profit companies: 71% of semiconductor and 61% of aerospace workers work at for-profits.

Country income level has a similar impact on median salaries of optics and photonics disciplines. In aerospace, for example, 88% of workers are located in North America or higher-income European countries.

### **Median salary by discipline: For-profit, government/military, and academic employers**

<b>Discipline</b>	<b>Academic</b>	<b>Government military</b>	<b>For-profit</b>
Semiconductor	\$54,310	\$53,259	\$135,000
Systems engineering or research	\$149,000	\$91,520	\$127,000
Aerospace	\$57,520	\$87,000	\$120,000
Physics	\$57,314	\$63,911	\$120,000
Interdisciplinary engineering or research	\$49,367	\$68,476	\$115,000
Optical systems	\$55,631	\$63,911	\$112,863
Materials	\$65,216	\$81,594	\$111,845
Electrical or electronics	\$56,000	\$74,563	\$110,390
Photonics	\$51,494	\$63,911	\$110,000
Remote sensing	\$53,259	\$53,400	\$102,258
Biomedical, medical, biology, biophysics, biotechnology, or healthcare	\$54,799	\$63,911	\$101,160
Optical design	\$60,528	\$46,368	\$101,009
Lasers	\$59,650	\$48,423	\$100,000
Nanotechnology	\$52,539	\$52,624	\$100,000
Astronomy or astrophysics	\$48,000	\$51,826	\$97,500
Computer science, software, or information technology	\$62,510	\$62,472	\$97,000
Manufacturing	\$57,293	\$64,624	\$95,000
Chemical	\$43,825	<b>\$69,405</b>	\$91,302
Illumination	\$53,259	<b>\$75,628</b>	<b>\$90,720</b>
Other	\$91,912	\$82,744	\$90,083
Mechanical	\$55,390		\$89,000
Civil or environmental	\$51,827	\$20,452	\$51,129

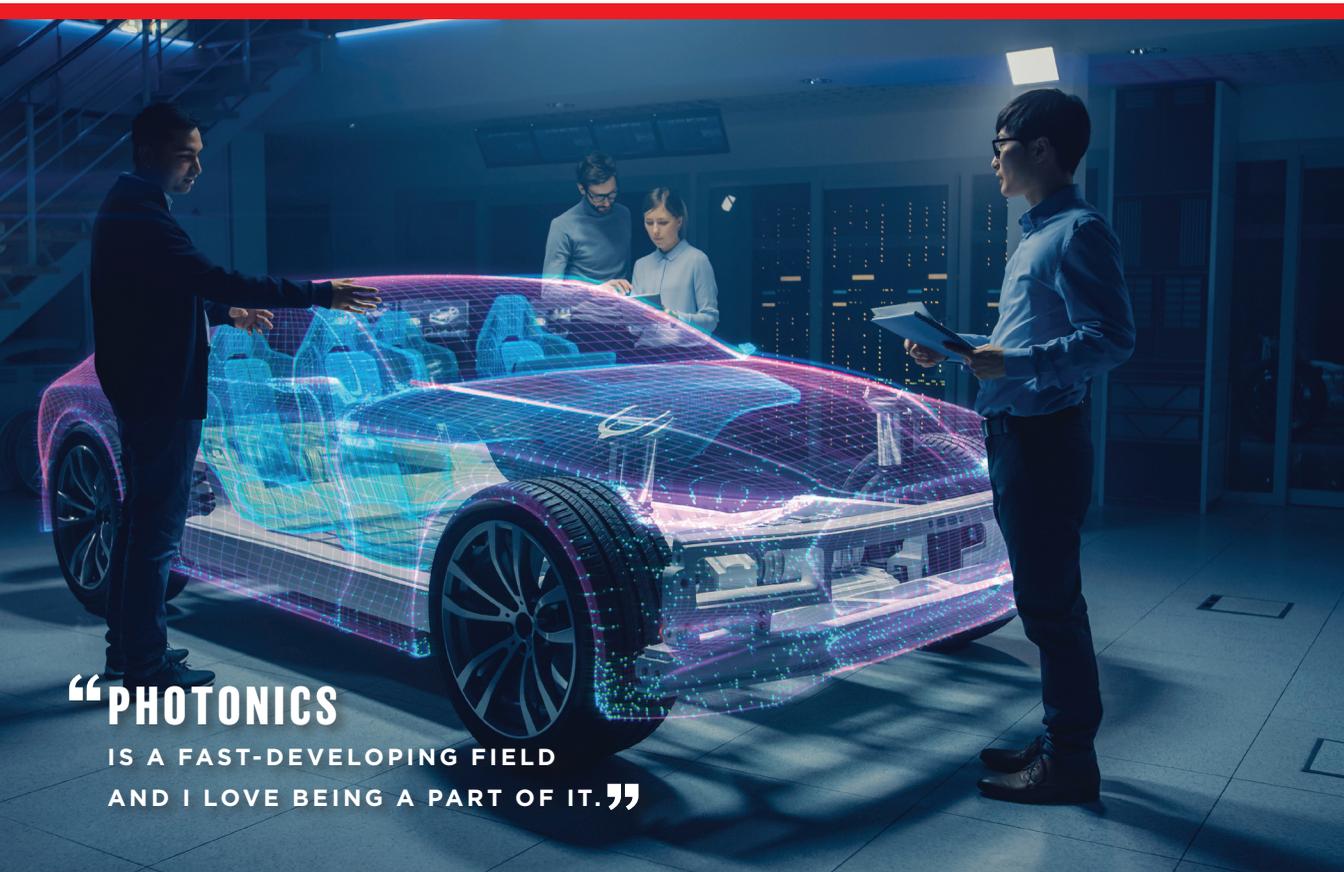
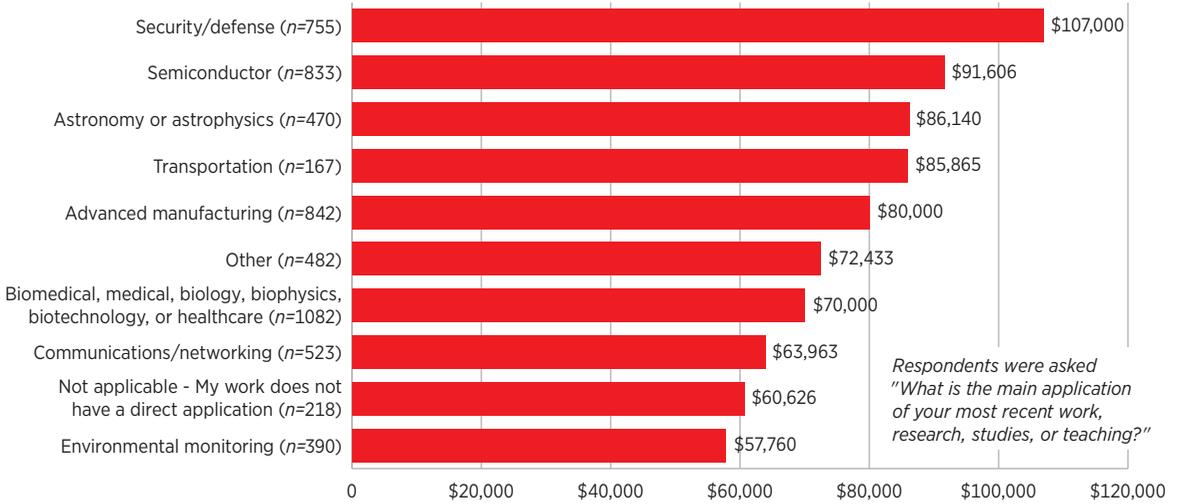
*The blank cell results from a sample size below 5 respondents. Gold numbers indicate sample size of 5-9.*

**“BECOME THE EXPERT - THE ONE PEOPLE WANT TO ASK THE HARD QUESTIONS.”**

# Application Area

Security/defense is the highest-paid application area, which is unsurprising given that 55% of these workers are in aerospace, the highest-paying discipline.

### Median salary by application area



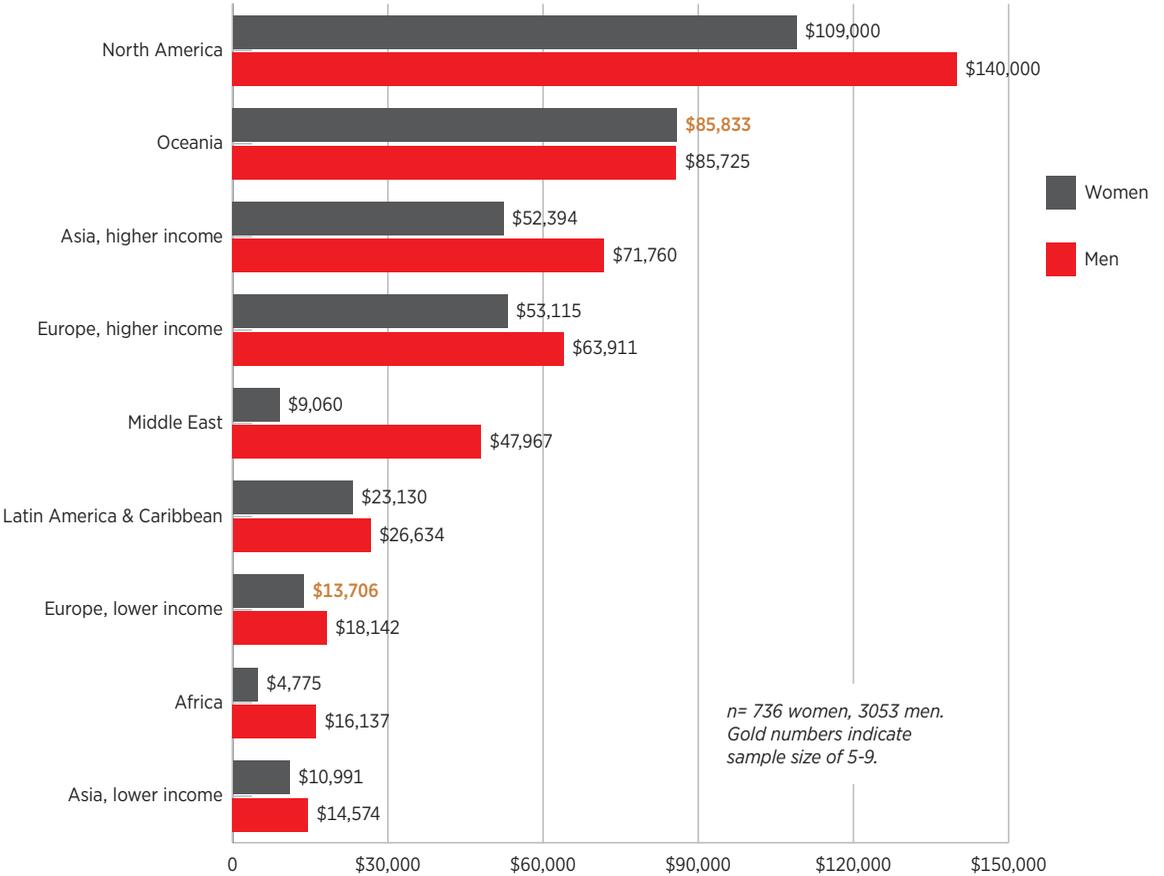
**“PHOTONICS**  
IS A FAST-DEVELOPING FIELD  
AND I LOVE BEING A PART OF IT.”

Photo credit: Getty Images, Gorodenkoff

# Gender

Women make up 23% of the respondents to the survey, 33% of students, 19% of fulltime workers, and 31% of part-time workers. The median salary for full-time women workers is \$69,000, versus \$83,225 for men.

### Median salary by gender and region



Men have higher median salaries at all types of employers, though women at 5-10 years and 16-20 years of employment have higher median salaries than their male colleagues.

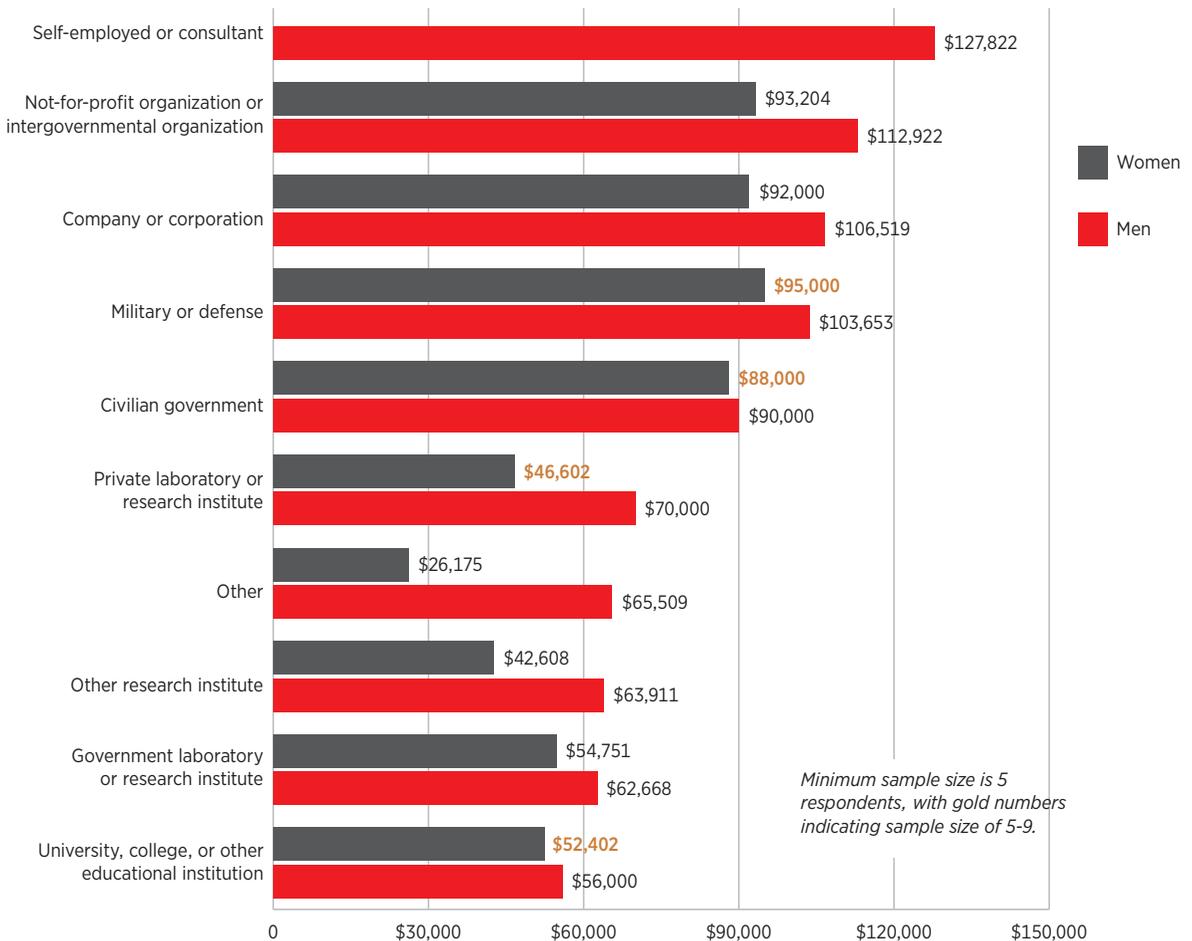
**“IN EVERY PROJECT I’VE WORKED,  
I AM STILL THE ONLY ONE OR  
ONE OF 2 WOMEN WITH ACTUAL ENGINEERING ROLES.”**

## Median salary by gender and years employed

	Women	Men
Less than one year	\$47,294	\$54,218
1-2 years	\$49,720	\$54,000
3-5 years	\$56,000	\$62,000
5-10 years	\$70,000	\$69,237
11-15 years	\$70,223	\$75,455
16-20 years	\$90,000	\$87,497
21-25 years	\$85,385	\$106,519
26-30 years	\$93,933	\$130,674
More than 30 years	\$104,153	\$145,750

*n=458 women, 2135 men*

## Median salary by gender and employer type



**“IT’S THE TEAMWORK THAT DECIDES THE SUCCESS OF THE PROJECT.”**

# Other Factors

Other factors that influence salary include job level and job role. Top organizational leaders enjoy the highest salaries, while research and teaching assistants anchor the bottom of the range.

## Median salary by job level

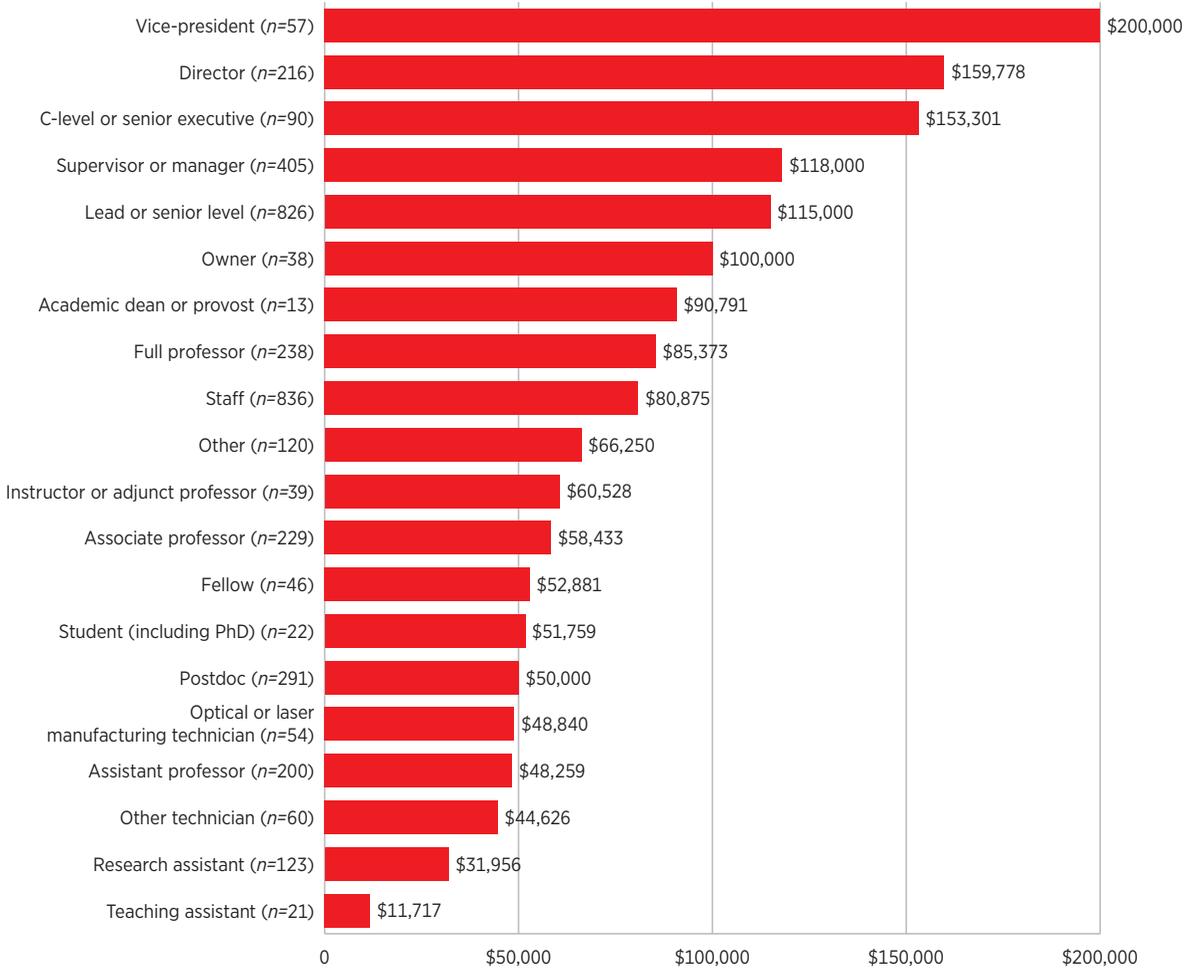


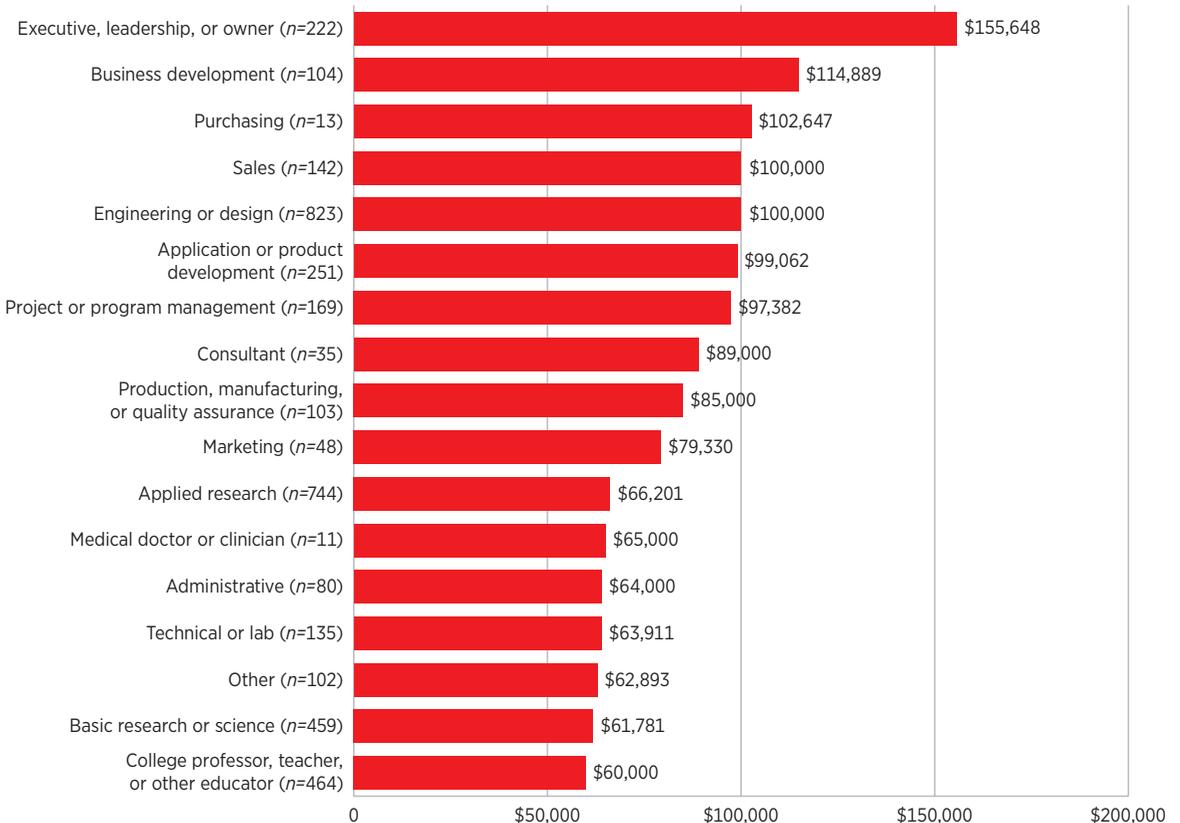
Photo credit: Getty Images, Nitat Termmee

## Median salary by job level, selected countries

	Postdoc	Staff	Lead or senior level	Supervisor or manager	Assistant professor	Associate professor	Full professor
Switzerland		\$118,570	\$140,128	\$150,907			
United States	\$58,000	\$115,500	\$156,000	\$165,000	\$108,500	\$109,000	\$180,000
Israel		\$104,073	\$136,863				
Germany	\$64,976	\$78,291	\$87,878	\$106,093		\$91,606	\$141,137
Netherlands	\$55,390	\$74,563					
South Korea	\$32,722	\$71,760	\$79,733	\$87,706			\$111,626
Japan		\$56,745	\$75,659	\$75,659	\$49,935	\$68,094	\$83,225
France	\$38,347	\$47,401	\$71,900	\$71,322		\$42,608	\$66,042
United Kingdom	\$44,746	\$43,537	\$61,677	\$82,599		\$72,562	\$96,749
Italy	\$23,434	\$42,608	\$53,259	\$55,922	\$39,838	\$58,585	\$74,563
Spain	\$36,110	\$40,477	\$50,596			\$53,792	\$74,563
Taiwan	\$24,608	\$38,076	\$84,780	\$130,431			
Peoples Republic of China		\$34,768	\$51,129	\$43,825	\$26,295	\$32,869	\$40,173
Russia		\$19,661	\$28,975			\$20,006	
India	\$8,684	\$9,716	\$21,254	\$10,323	\$13,360	\$17,610	\$23,318

Sorted by Staff median salary. Minimum cell sample size is 5 respondents, with gold numbers indicating sample size of 5-9.

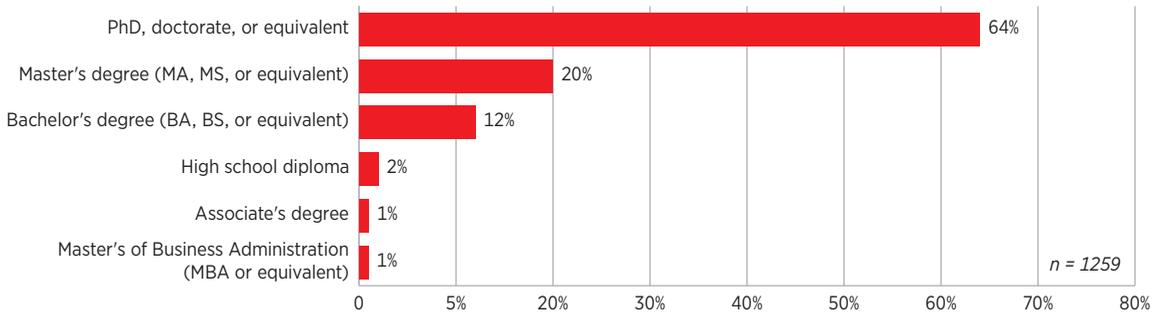
## Median salary by job role



# Students

The majority of student respondents are pursuing PhDs.

### Degree being pursued



**“I LOVE MY JOB AND EVERYTHING RELATED TO SCIENCE.”**

Photo credit: Getty Images, Monty Rakusen



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Onsite at Job Fairs in 2023

<b>Photonics West</b>	San Francisco CA, Jan/Feb
<b>AR   VR   MR</b>	San Francisco, CA, Jan/Feb
<b>Defense + Commercial Sensing</b>	Orlando, FL, May
<b>Optics + Photonics</b>	San Diego, CA, August
<b>Optifab</b>	Rochester, NY, October

# Methodology and Endnotes

In December of 2022, SPIE sent email survey invitations to a large subset of its global customer database. Response was voluntary and open. A gift card raffle and early access to this report were offered as incentives to encourage participation. Surveys were completed online using the Alchemer enterprise survey tool. Results were filtered for duplicates and invalid data to yield 5,568 valid responses. Microsoft Excel and SPSS were utilized for summary statistics and related analyses.

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## Notes:

1. This count of respondents by country includes valid responses from full-time, part-time, unemployed, student, and retiree respondents. United States (2045), Germany (302), India (302), Peoples Republic of China (279), United Kingdom (264), Canada (191), Italy (183), Japan (172), South Korea (126), Spain (112), France (92), Netherlands (85), Mexico (83), Russia (77), Brazil (75), Turkey (69), Switzerland (63), Taiwan (63), Israel (55), Poland (48), Finland (43), Belgium (39), Singapore (38), Australia (34), Czechia (33), Austria and Pakistan (30), Egypt (29), Colombia (28), Portugal (26), Lithuania (25), Denmark (24), South Africa (22), Sweden (20), Chile (19), Greece and Ireland (18), New Zealand (17), Iran and Malaysia (16), Argentina and Ukraine (12), Indonesia and Thailand (11), Hungary, Iraq, Latvia, and Romania (10), Armenia, Ethiopia, and Norway (9), Nigeria and United Arab Emirates (8), Bulgaria, Morocco, Saudi Arabia, and Vietnam (7), Belarus, Hong Kong SAR, China, Kenya, and Slovenia (6), Algeria (5), Estonia, Ghana, Kazakhstan, Serbia, Slovak Republic, and Tunisia (4), Cameroon, Ecuador, Kuwait, Peru, Qatar, and Venezuela (3), Democratic Republic of the Congo, Côte d'Ivoire, Cyprus, Moldova, and Philippines (2), Afghanistan, Angola, Azerbaijan, Bangladesh, Brunei, Guatemala, Kyrgyz Republic, Lebanon, Libya, Macao SAR, China, Malta, Montenegro, Nepal, Oman, Paraguay, Sri Lanka, Swaziland, Tajikistan, Uganda, Uruguay, Uzbekistan, and Zimbabwe (1)
2. US dollars are used throughout. Local currencies were converted using January 2023 market exchange rates. Salary figures include total yearly compensation, both base pay and bonuses. Full-time employees are those who indicated working 35 or more hours per week. Unless otherwise noted, all data on pay is drawn from full-time employees.
3. Yearly growth was computed by comparing same-currency results for each year.
4. Oceania is comprised of Australia and New Zealand. North America is comprised of the United States and Canada. Mexico and Guatemala are included in the Latin America and Caribbean category.
5. Europe and Asia are composed of countries spanning a wide range of income levels, even when subdivided into higher- and lower-income groups. For example, the European higher-income category includes Lithuania and Norway at \$21,740 and \$83,880 per capita Gross National Income (GNI), respectively, for 2021. European lower-income countries include Bulgaria at \$11,200 and Moldova at \$5,370. Higher- and lower-income subcategories are based on the World Bank's threshold for high-income countries, \$13,205 per capita GNI in 2021. This threshold is used throughout this report when referring to "higher-income" and "lower-income" countries. For data on per capita GNI, see <http://data.worldbank.org/indicator/NY.GNP.PCAP.CD/countries>. For World Bank country income categories, see <http://data.worldbank.org/about/country-classifications>.
6. The category "for-profit" is composed of company/corporation, self-employed/consultant, and fill-in "other" entries that indicate for-profit affiliation. "Academic" is composed of university/college, private lab or research institute, not-for-profit, intergovernmental, other research institute, and open-text "other" entries that indicate academic organizations. "Government/military" is composed of government lab or research institute, civilian government, and military/defense.

**“ REGARDING MY CAREER,  
I JUST WANT LEARN  
MORE AND MORE.”**

# Notes

**“ A CAREER IN PHOTONICS  
IS ALL LIGHT WORK! ”**

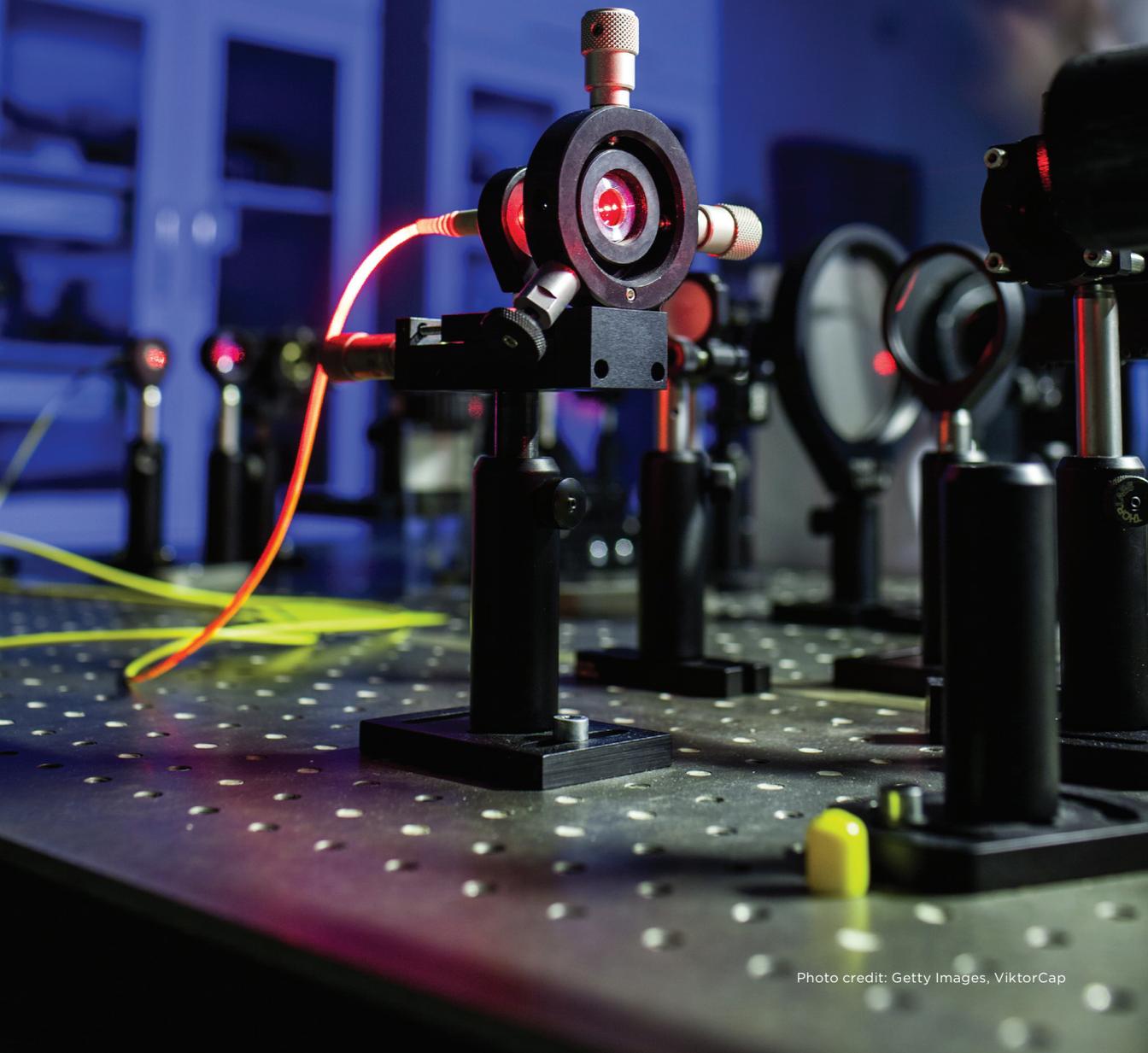


Photo credit: Getty Images, ViktorCap

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OPENED DOORS FOR ME  
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TO MY SUCCESS.”

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