MENTORING FOR CAREERS IN PHYSICS

Who We Are

We provide a one-on-one professional mentorship designed for undergraduate students

Who Should Join

We welcome undergraduate students who are female, trans, or non-binary in physics!

Why Join Us

Our mentors offer valuable professional insights and expertise that help provide career guidance and networking opportunities

Sign Up!

SCAN ME

New and returning members should fill out this google form!
https://forms.gle/8SRtm2qX7PniE5S2A

Curious To Learn More?

Please follow our:

LinkedIn: wmmcp

Instagram: @wm_mcp

Twitter: @wm_mcp

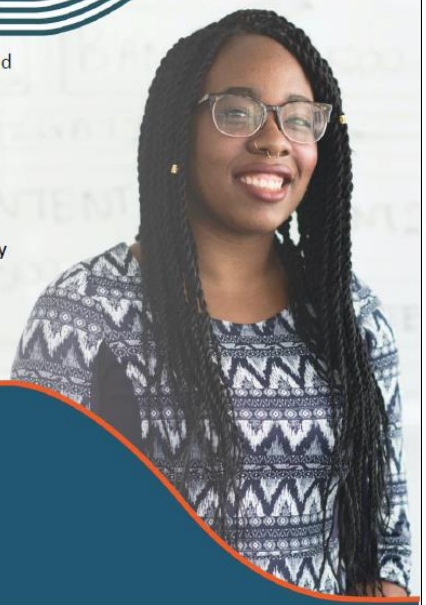
And view our website!

mcp.physics.wm.edu

VMEC'S 2025 SCHOLAR INTERNSHIP PROGRAM

MICROELECTRONICS

MAY – AUGUST, 2025



Virginia Microelectronics Consortium (VMEC) has exciting research and industry opportunities in the rapidly growing field of microelectronics (semiconductor chips) and is looking for strong candidates for our 2025 undergraduate summer scholars exchange program.

INTERNSHIP LOCATIONS (Industry in Blue *)

- BAE Systems *
- Elbit Systems of America *
- George Mason University
- Micron Technology *
- Norfolk State University
- Old Dominion University
- University of Virginia
- Virginia Commonwealth University
- Virginia Tech
- Virginia State University
- William & Mary

IF YOU ARE

- beyond your first year of college in a 4-year undergraduate degree program at a university in Virginia or
- a student at a community college in Virginia and have already been accepted to a 4-year university in Virginia,

you are eligible to join us for a summer internship that will give you a hands- on, state-of-the-art research or industry experience in microelectronics. The VMEC internship provides excellent technical knowledge as well as industrial and academic contacts for your career development.

Benefits

- Attractive pay: $850/week for 12 weeks minimum
- Hands-on industry or research experience
- Mentorship
- Digital Badge and Certificate
- Exposure to job or graduate school opportunities
- Networking

Internship Requirements

- Attend the June kick-off meeting and give an introductory oral report.
- Work 12 weeks on a project at a location other than your home school.
- Give oral and poster presentations at the end of the internship in August.

- Strong preference is given to candidates with a 3.0 GPA or better.

For more information (or use QR code)
vmecteam.org/vmec-summer-scholar-program

Application Deadline
October 31, 2024

- Register for virtual information sessions to learn more about these opportunities (use QR code).

- Visit the website (use QR code) for
  - Locations
  - Job descriptions
  - Schedule for information sessions
  - Link to application form

- Applications are now being accepted.

VMEC
VIRGINIA MICROELECTRONICS CONSORTIUM

Decision Timeline:
Early Decisions: December 16, 2024
Final Decisions: January 7, 2025

Thermal Light Sources

Blackbody Radiation

- The oldest and simplest way to make light is by **heating** something up (filament, gas, wood, etc).
- Hotter = brighter, colder = dimmer.
- **Hotter = white-blue**, colder = dim red.
- Color of thermal source → temperature.

incandescent lightbulb

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Blackbody (definition): An object that does not reflect light. All light emitted by its surface is due to heat.

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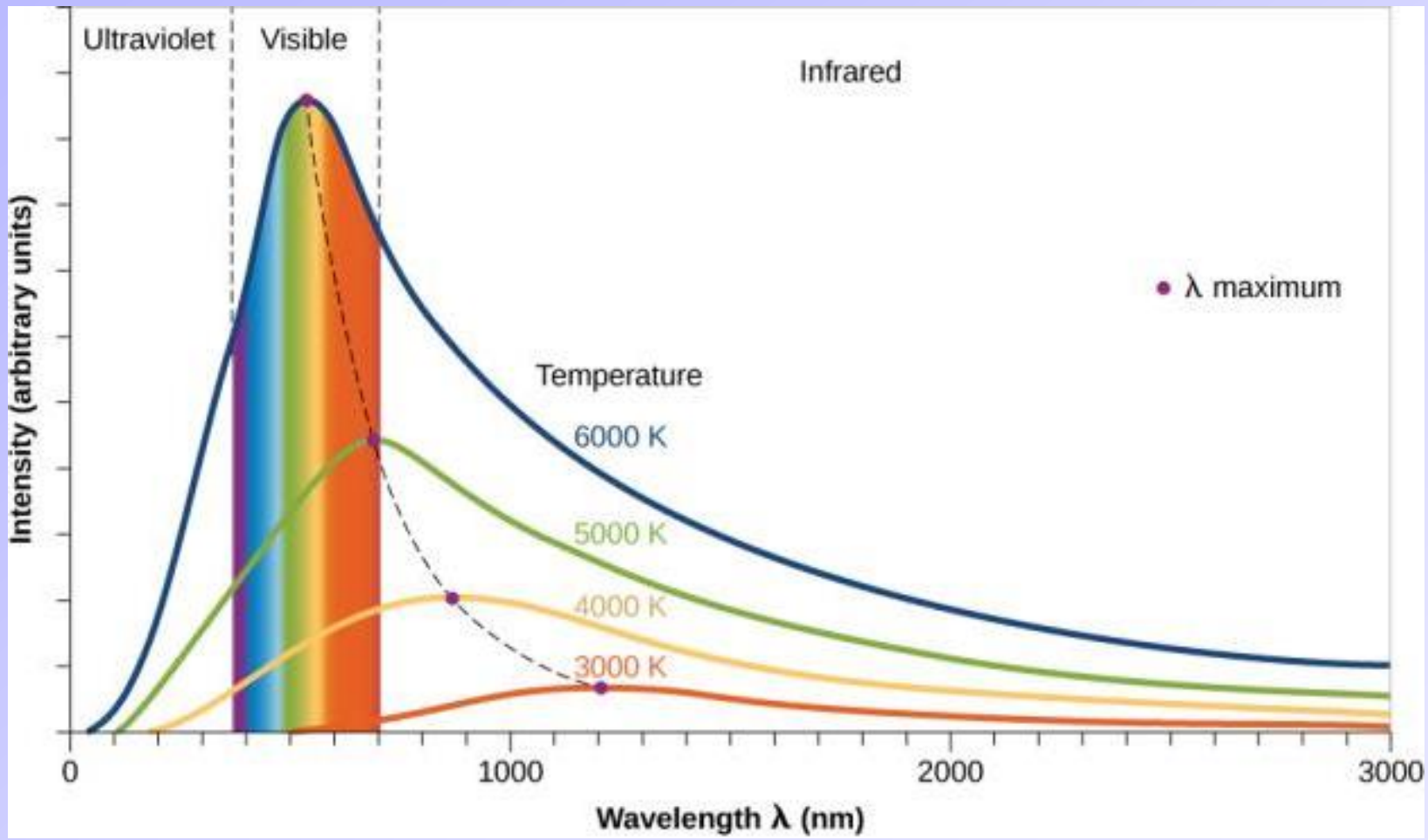
Ideal thermal source of light

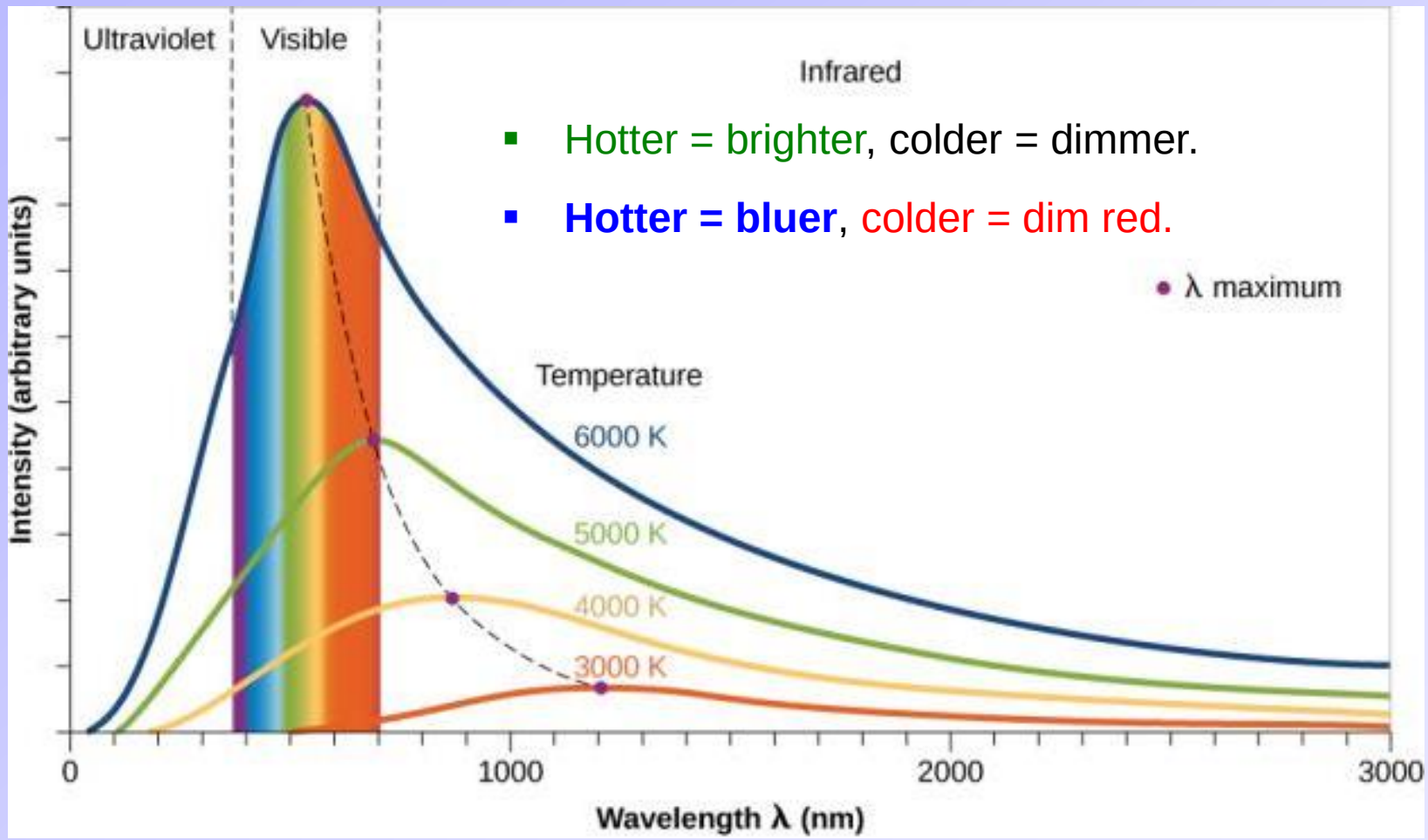
Blackbody Radiation (1)



Planck's Law: Spectral Radiance = Intensity at a given wavelength

$$= \frac{8\pi hc^2}{\lambda^5 (e^{hc/\lambda kT} - 1)}$$

Blackbody Radiation (1)



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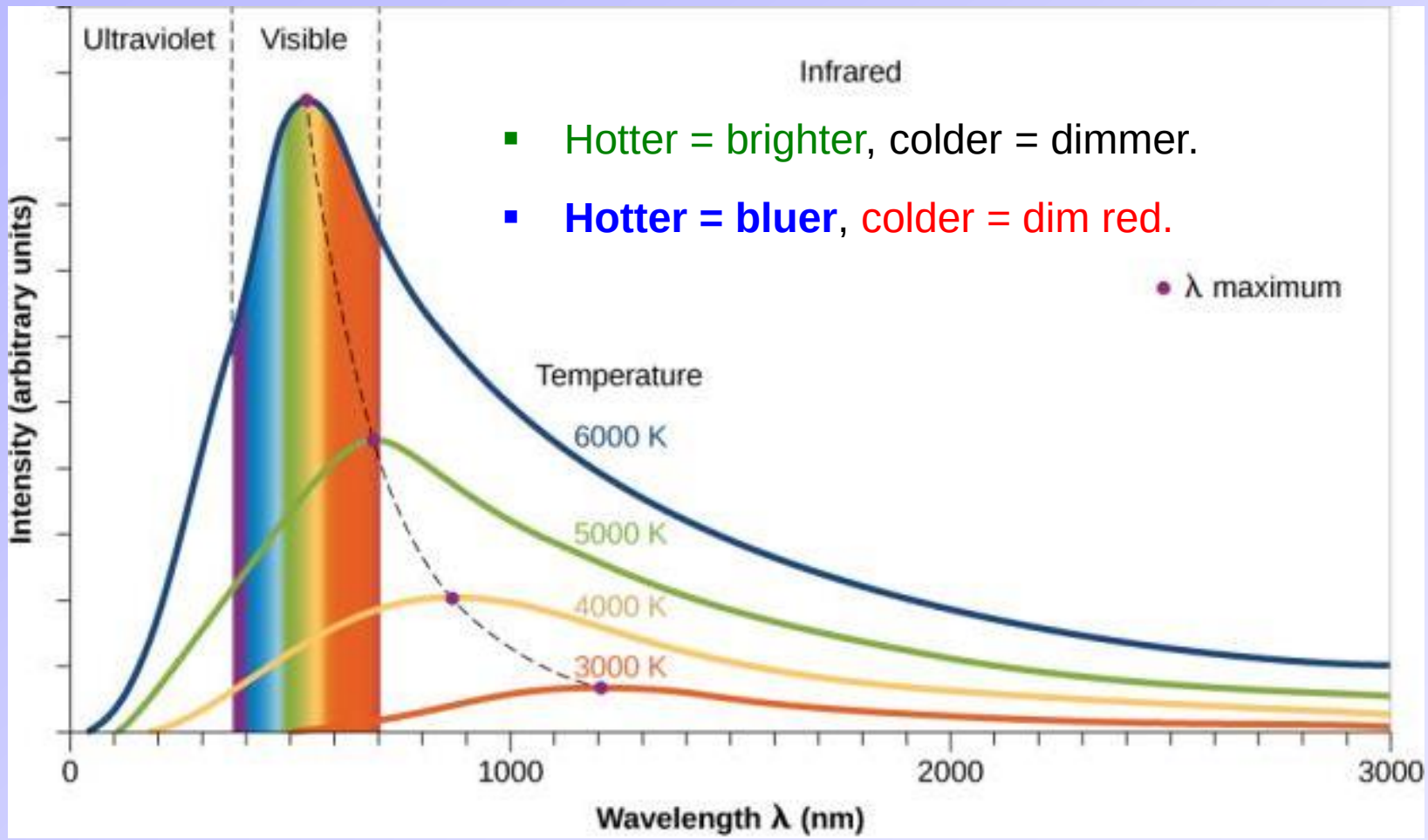


- Hotter = brighter, colder = dimmer.
- **Hotter = bluer**, colder = dim red.

Wien's Law: $\lambda_{max} = \frac{2.898 \times 10^{-3}\ m \cdot K}{T}$

meters

degrees Kelvin

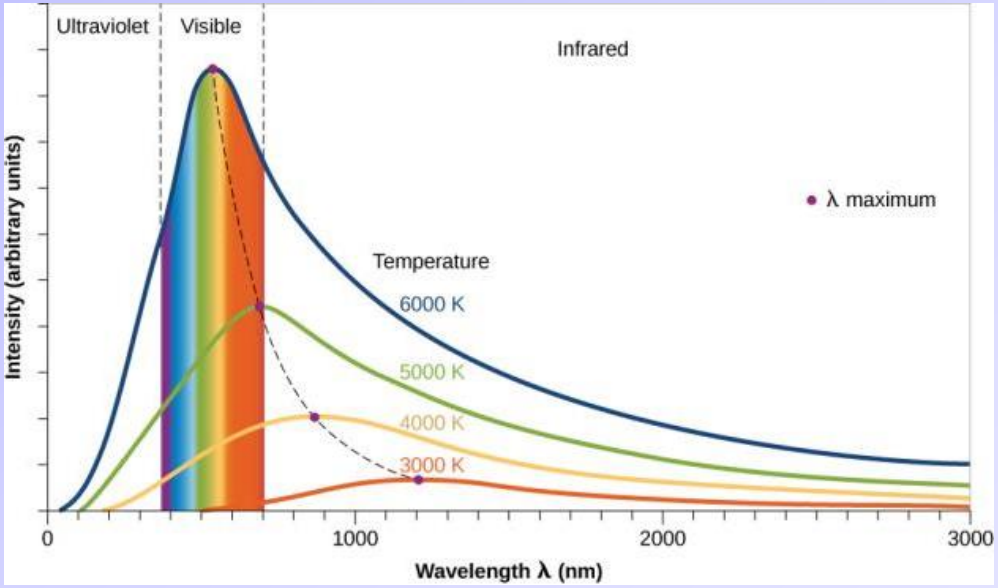
Blackbody Radiation (2)

- Total output power (per unit area)
  = area under the curve
  = Luminosity (L)

- Power = Energy per time

- Luminosity = Power per area

area of blackbody



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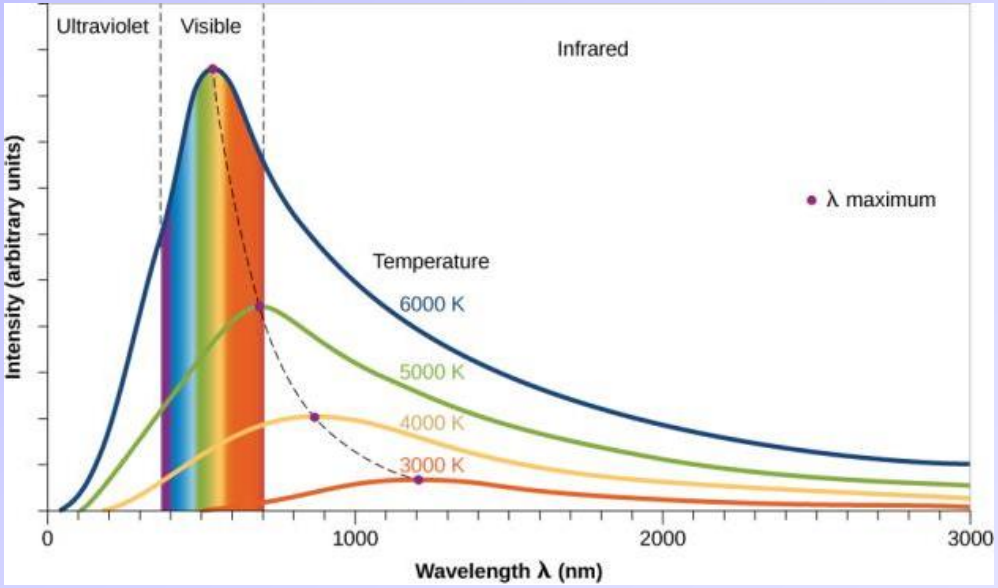

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Stefan-Boltzman constant: $\sigma = 5.6703 \times 10^{-8} \frac{\mathrm{W}}{\mathrm{m^2 K^4}}$

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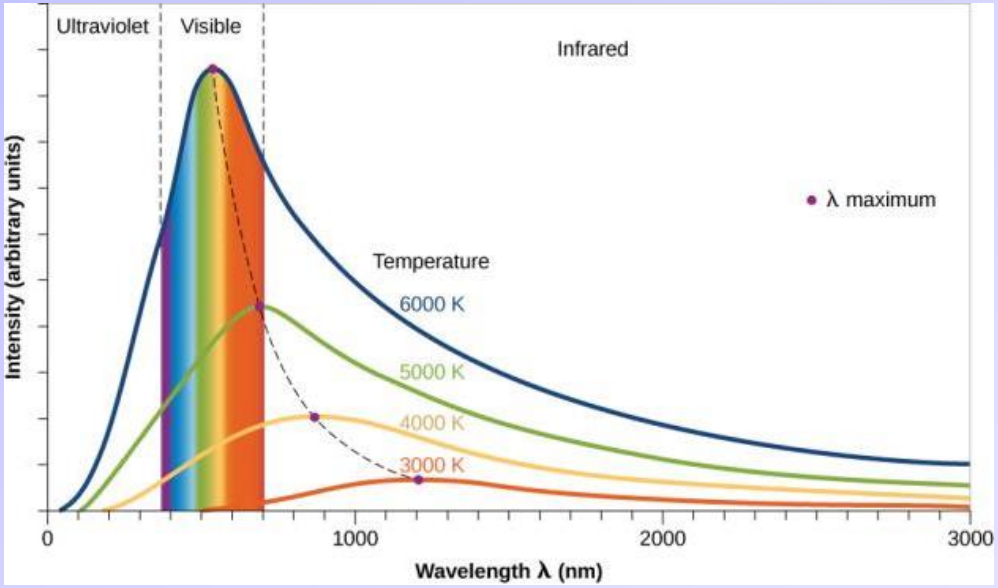

Stefan-Boltzman Law: $L = \sigma T^4$ Increasing temperature, increases output power a lot

Stefan-Boltzman constant: $\sigma = 5.6703 \times 10^{-8} \frac{\mathrm{W}}{\mathrm{m^2 K^4}}$