

Curriculum Unit Title: We Are Made of Star Stuff

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KEY LEARNING, ENDURING UNDERSTANDING, ETC.

NGSS Standard HS-ESS1-3 – communicate ideas about the way stars, over their life cycles, produce elements
NGSS Standard HS-PS1-8: develop a model based on evidence to illustrate the changes in the nucleus and the energy released in nuclear processes

ESSENTIAL QUESTION(S) for the UNIT

How do stars produce elements throughout their life cycle

CONCEPT A

Big Bang Nucleosynthesis and Cosmic Recycling

CONCEPT B

Fission vs Fusion

CONCEPT C

Star Composition

ESSENTIAL QUESTIONS A

How are light elements formed?
How are heavy elements formed?
How are elements recycled in the universe?

ESSENTIAL QUESTIONS B

What are the similarities and differences of fusion and fission?
How do fission and fusion impact the formation of elements?

ESSENTIAL QUESTIONS C

How can star composition be determined?

VOCABULARY A

Elementary particles Supernovae
Nucleosynthesis
Light elements
Heavy elements

VOCABULARY B

Fission
Fusion
Nucleus

VOCABULARY C

Spectra
Wavelength

ADDITIONAL INFORMATION/MATERIAL/TEXT/FILM/RESOURCES

Neil deGrass Tyson. 2017. Astrophysics for People in a Hurry. Carl Sagan. 1980. Cosmos. Hyperphysics: hyperphysics.phy-astr.gsu.edu
Chandra X-Ray Center: Chandra.harvard.edu