

PHYSICS WITH DR SERIM ILDAY

TALKING POINTS

KNOWLEDGE

1. What is a colloid?
2. What is self-assembly?

COMPREHENSION

3. Why are Serim's findings important for science?
4. How does Serim's team use lasers to build specific structures?

APPLICATION

5. Can you think of any ways that nanotechnology – such as building nanoscopic structures – have benefited society?
6. Serim says their results could benefit 'economics, ecology, or sociology'. What might be some examples of these benefits?

ANALYSIS

7. What was different about Serim's research that meant its results were more widely applicable than previous research on colloids?
8. What do you think happens to the polystyrene aggregates when the laser is switched off?

SYNTHESIS

9. How would you design a study using Serim's findings to assess the effectiveness of different drugs against a certain pathogen?

EVALUATION

10. What might be the next steps for Serim's research? Are there any 'knowledge gaps' to fill?

ACTIVITIES YOU CAN DO AT HOME OR IN THE CLASSROOM

Think about how you would explain Serim's research to the general public. Create a series of annotated diagrams that illustrate colloids, self-assembly and some real-world applications. Think about:

- How much information to include – what level of complexity is appropriate?
- How to make it visually appealing – use of colour, images and graphic design.
- Three key messages you want viewers to walk away with.
- What viewers should do if they want to know more.

Aptly named 'Do Try This At Home', the Institute of Physics (IOP) has a list of physics experiments you can easily do at home or in the classroom:

www.iop.org/explore-physics/at-home

We also recommend signing up to Qubit, the IOP's e-newsletter for school and college students. The newsletter has lots of information about what is new in physics, exam and university guidance, careers and upcoming events and competitions: www.iop.org/education/school-and-college-students/Qubit

MORE RESOURCES

- The website of the 'Simply Complex Lab', which Serim runs, has lots of information about their research and how to get in touch: staff.bilkent.edu.tr/serim/
- This article on Phys.org explains the importance of Serim's research and how it came about: phys.org/news/2020-04-scientists-uncover-principles-universal-self-assembly.html
- This video from Beauty of Science provides a clear explanation of colloids, nanoparticles and self-assembly: www.youtube.com/watch?v=Xp147umPmLI
- What are some of the biggest ideas in physics? Find out the stories behind the most significant discoveries that have shaped our understanding of the universe: www.iop.org/explore-physics/physics-stepping-stones