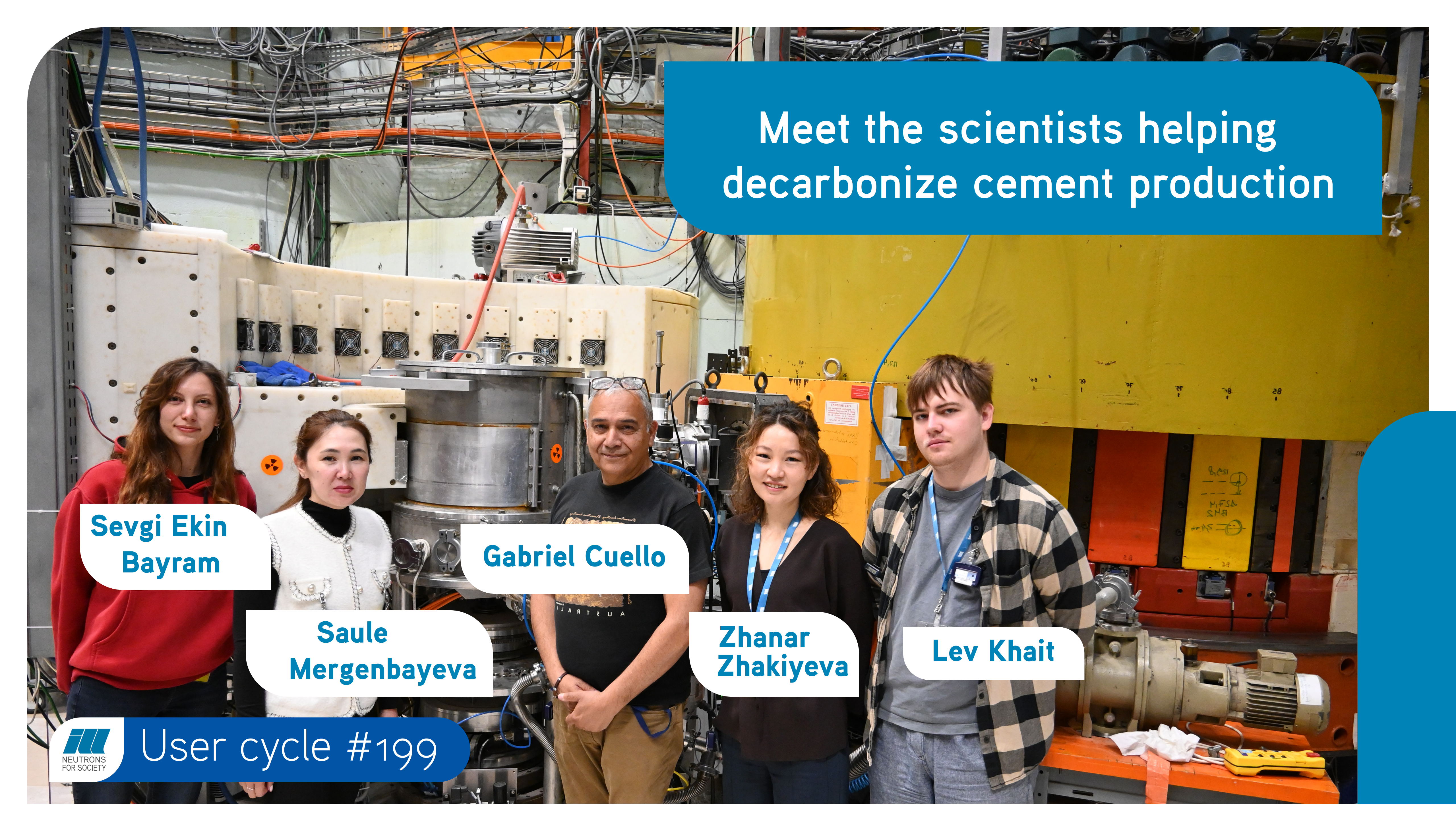


A group of five scientists standing in a laboratory filled with complex machinery and cables. The scientists are arranged in a line, with three women on the left and two men on the right. The background features large white and yellow industrial equipment with numerous cables and pipes. A blue banner at the top right contains the title text.

Meet the scientists helping decarbonize cement production

**Sevgi Ekin
Bayram**

**Saule
Mergenbayeva**

Gabriel Cuello

**Zhanar
Zhakiyeva**

Lev Khait



Cement production is responsible for 5–7% of global CO₂ emissions, largely because it requires heating limestone at very high temperatures to produce clinker (the main “glue” inside cement). Replacing part of the clinker with industrial waste materials offers a double benefit: reducing carbon emissions while reusing industrial waste.

The team studies how replacing up to 95% of Portland cement (the world's most widely used cement) with industrial waste materials changes the properties of low-carbon cements.



“Water strongly influences the durability and long-term performance of low-carbon cement. Neutrons are uniquely sensitive to hydrogen, allowing us to study how water is organised at the nanoscale.”

Zhanar Zhakiyeva



From industrial waste to low-carbon cement, understanding these materials at the nanoscale could help shape more sustainable construction technologies.

