

Chondrules younger than thought

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A University of Toronto scientist has found unexpectedly "young" material in meteorites, a discovery that breaks open current theory the early solar system.

Researchers who have studied chondrules generally agree that most were formed as a sudden, repetitive heat, likely from a shock wave, condensed the nebula of dust floating around the early sun.

University of Toronto geologist Yuri Amelin and lead author Alexander Krot of the University of Hawaii studied the chondrules' mineralogical structure of the meteorites of Gujba and Hammadah al Hamra and determined their isotopic age. "It soon became clear that these particular chondrules were not of a nebular origin," says Amelin. "And the ages were quite different from what was expected. It was exciting."

Amelin said not only were these chondrules not formed by a shock wave, but they emerged much later than other chondrules.

The evolution of the solar system has been seen as a linear process, through which gases around the early sun gradually cooled to form small particles that eventually clumped into asteroids and planets. Now there is evidence of chondrules forming at two very distinct times, according to the study published in Nature.

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