Dr. V. Rama Murthy study of solar system under NASA grant

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The early history of our solar system is being given a close look on the San Diego campus of the University of California.

Dr. V. Rama Murthy, Assistant Professor of Geology, is conducting two separate but related research activities. He is studying the possibility that radioactivity, now extinct, was a source of heat in the early solar system, and also studying the isotopic differences between meteorites and the earth.

Dr. Murthy's work is being supported by a two-year, $44,877 grant from the National Aeronautics and Space Administration.

According to Dr. Murthy, recent studies by many investigators have indicated in the direction of an earlier suggestion by Dr. Harold Urey, Professor of Chemistry at Large at UCSD, that extinct radioactivity may have been a source of heat in the early solar system. If it is established that such extinct activity existed, the widely debated problem of the heat source in the early solar system may be solved.

In addition, important insights into the time scale of events in the growth history of nonvolatile matter in the solar system would be obtained.

Dr. Murthy's work will include a search for the extinct activity of A126, a radioactive isotope of aluminum, in meteorites. He says there has been much speculation on the extinct radioactivity of A126 as a heat source, but no experimental work has been done so far to search for the effects. To be an important heat source, Dr. Murthy says, the abundance of a radioactive nuclide should be sufficiently high and Al 26 has been cited as the most likely candidate.

The second aspect of the research concerns the nuclear history of the nonvolatile matter of the solar system, when it was a part of parent meteorites or when it was scattered in the nebula before the start of any significant growth process.

Recent theoretical work and experimental work on krypton and xenon isotopes seem to indicate that various nuclear processes may have been operative in the early solar system, thereby producing isotopic differences between meteorites and the earth.

It is of great importance to establish the existence and time of occurrence of such nuclear processes, Dr. Murthy says. Careful studies of isotope abundances of certain elements in meteorites provide a powerful means of obtaining not only the gross history but also the finer details of such nuclear processes.