

Session Title: Role of Clay Minerals in the Events Leading to the Origin of Life

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Dedicated to the memory of George W. Brindley

As first suggested by J. D. Bernal, clay minerals play an important role as catalyst in chemical evolution by adsorbing the monomers of biologically important molecules on their surfaces, thereby bringing them into a favorable orientation for reactions to occur. We have demonstrated that montmorillonite catalyzed reaction of monomers produces short RNA chains under prebiotic conditions: More importantly, these *synthetic* RNA chains can replicate themselves to produce the complementary RNA chains.

Clay minerals also protect the building blocks of RNA and proteins against the effects of UV and gamma radiation, and effects of shock impacts mimicking the asteroid impacts.

In addition to their abundance on Earth, phyllosilicates have also been identified on Martian surface. Catalysis for the formation of RNA and protein chains, and protection of their monomers against radiation effects and shock impacts by clay minerals on Earth and on Mars and other planets may have played an important role in the events leading to the origin of life.

In this session, we welcome the contributions presenting the role of minerals, especially clay minerals in the events leading to the origin of life on Earth, and on other planets.