

Executive Summary of IAUS 345

This multi-disciplinary symposium explored the chain of events that could have been involved in the formation of the Earth and the earliest lifeforms. Many steps in this process have been inferred from detailed observations and computer models. Stars form in dense interstellar clouds and are usually clustered among other stars. The environment of the early Sun should have been affected by that clustering, as suggested by peculiarities in the isotopic composition of meteorites. Protoplanetary disks that may form Earth-size planets have been studied at high resolution using interferometric techniques in infrared and radio wavelengths. These observations reveal the chemistry and dust content of the disks, and possible interactions with the growing planets. While there are no direct observations yet of Earth-size protoplanets, there is evidence for Earth-sized planets around other stars, and there are clues to the formation process of the Earth itself from within our Solar System. The conditions for habitability are more difficult to observe and model. How these conditions arose and the nature of the first organisms are topics of intense study in many fields. The purpose of this symposium was to bring together researchers in these fields so that each component of our origins story can motivate and illuminate the others, while giving a concise summary of the current state of knowledge for the next generation. The approaching availability of large new observatories will provide an unprecedented opportunity to explore our origins even further.

The meeting had 10 invited talks at 30 minutes each, 37 contributed talks at 15 minutes each, and three 15-minute poster sessions to summarize select posters from the total number of 151. There were 190 registered attendants from 34 countries. There was also a Plenary talk on this topic by SOC co-chair, Professor Manuel Guedel of Vienna, and a summary of highlights from the Symposium by another SOC co-chair, Professor L. Viktor Toth of Budapest, at Division H Days on the day after the Symposium ended.

An accompanying summer school “Basics of Astrobiology” was organized at the University of Vienna for the two days prior to the General Assembly, 17-18 August 2018. There were approximately 100 attendees and 11 speakers. The talks were videotaped and put on www.youtube.com.

Bruce Elmegreen, SOC co-chair
January 26, 2019