
On biosignatures and tracers of life

Inge Loes ten Kate (Utrecht University)

Inge Loes ten Kate, Christophe Malaterre, Mickael Bacqué, Vinciane Debaille, John Lee Grenfell, Emmanuelle Javaux, Fabian Klenner, Yannick Lara, Sean McMahon, Keavin Moore, Lena Noack, Nozair Khawaja, Lucas Patty, Frank Postberg

Biosignatures are widely sought after within the solar system and exoplanet communities. But what are we talking about, when we talk about biosignatures? The concept of a “biosignature” is widely used to suggest a link between an observation and a biological cause, depending on the context. The term itself has, however, been defined and used in different ways in each of the different parts of the scientific community involved in the search for past or present life on Earth and beyond. With the ongoing acceleration in the search for life in our solar system and on exoplanets, there is a need for clarity and accuracy in the formulation and reporting of claims. This includes the discussion of false positives as well as false negatives. In this talk, resulting from the ISSI Tracers team, we discuss an inventory of questions that scientists and other interested parties should ask when assessing any reported detection of a “biosignature” to better understand exactly what is being claimed. This would improve clarity and accuracy in the formulation of claims and subsequent technical and public communication about some of the most profound and important questions in science and society.