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Report on the short visit at BiGeA, University of Bologna, Italy

At the end of January I made a short visit in the Laboratory of Astrobiology and Geomicrobiology from the Department of Biological, Geological and Environmental Sciences – BiGeA, University of Bologna, Italy, at the invitation of Prof. Barabara Cavalazzi. The aim of the visit was to assess the potential of the electron paramagnetic resonance (EPR) spectroscopy in early life and astrobiological research. We intended to start a new collaboration for EPR investigations of carbonaceous matter (CM) with an age of 3.5 to 3 billion years in rock samples from South Africa.

The first part of the visit consisted of a round table discussion, which allowed us to establish the basis of our collaboration. Prof. Cavalazzi made a presentation of the main research interests of her group, which we followed with a presentation of our EPR group from the Institute of Materials Physics, Romania (NIMP) and of the potential application of the EPR spectroscopy in the study of primitive CM. We focused mostly on the information that can be gained by EPR, the type of samples that can be investigated and the different experiments that can be performed. Given that I am the responsible for the NIMP EPR facility in the frame of the CERIC-ERIC distributed research infrastructure, I have also discussed the possibility to continue our collaboration by submitting a project proposal to the next CERIC calls. The research results thus obtained will be presented at international conferences and published in specialized journals. They will also constitute the basis for further common applications to EU research funding programmes.

After the round table discussions we have visited the host laboratory, including the sample preparation facility. The most important part of the visit was the selection of the appropriate samples to be tested later with EPR spectroscopy in Romania, and it required the presence and skills of both EPR and host laboratory experts. We had to define a protocol for sample preparation, by taking into consideration both the restrictions regarding the specimens handling and the instrumental needs of EPR. The selected samples will be prepared in Bologna, and will be characterized in terms of microfacies and chemical composition before sending them to our EPR facility in Romania.