

# **Environmental Study for Mediterranean Sea Ecosystem Using Seagrass and Algae Samples with Neutron Activation Analysis**

Nassar N.<sup>1</sup>, Kravtsova A.<sup>2</sup>, Frontasyeva M.<sup>2</sup>, Sherif M.<sup>1</sup>

<sup>1</sup>*Department of Physics, Faculty of Science, Cairo University, 12613, Giza, Egypt*

<sup>2</sup>*FLNP JINR, 6, Joliot-Curie str., 141980, Dubna, Russia*

Instrumental neutron activation analysis is used to determine the concentrations of Na, Mg, Al, S, Cl, K, Ca, Sc, Ti, V, Mn, Fe, Co, Ni, Zn, As, Se Br, Rb, Sr, Mo, Ag, Sb, I, Cs, Ba, La, Sm, Tb, Yb, Hf, Ta, Th and U in some types of marine macrophytes (algae and seagrass), collected from 7 stations along the Mediterranean Sea coast of Egypt. INAA was performed in the radio-analytical laboratory at the pulsed fast reactor IBR-2 of the Frank Laboratory of Neutron Physics, JINR, Dubna, Russia. The concentrations of most of these elements were rarely or never studied in this territory as well as the levels of classically investigated Mn, Fe, Co, Ni and Zn. The contents of elements in marine macrophytes indicated that they accumulated elements at different levels depending on their type of species (brown, red, green and seagrass) and the ambient water conditions. In general, the levels of classically investigated elements, particularly, Mn, Fe, Co, and Ni determined in the macrophytes in the present study were lower or within the wide range of values previously reported for the Mediterranean Sea. The concentrations of Zn measured in some samples were higher than the published data that can reflect a possible source of Zn contamination.

Keywords: Elemental analysis, neutron activation analysis, algae and seagrass