



VNIVERSITAT  
DE VALÈNCIA

VALORACIÓ DE LA TESI DOCTORAL  
VALORACIÓN DE LA TESIS DOCTORAL  
ASSESSMENT OF THE DOCTORAL THESIS

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Emès pel/la Dr./a. João Filipe Calapez de Albuquerque Veloso en qualitat de membre del tribunal avaluador de la tesi doctoral del Sr./a. MARCOS MARTÍNEZ ROIG

*Emitido por el/la Dr./a. João Filipe Calapez de Albuquerque Veloso en calidad de miembro del tribunal evaluador de la tesis doctoral del Sr./a. MARCOS MARTÍNEZ ROIG*

**Issued by João Filipe Calapez de Albuquerque Veloso as a member of the examination panel in charge of assessing the doctoral thesis submitted by MARCOS MARTÍNEZ ROIG**

Títol de la tesi / Título de la tesis / Thesis title

TRITIUM: Design, construction and commissioning of an in-water tritium detector.

**Valoració raonada del objectius concrets i del seu interès. / Valoración razonada de los objetivos concretos y de su interés. / Reasoned assessment of the specific objectives and their interest:**

The E.U. Council Directive 2013/51/Euratom establishes a limit of 100 Bq/L of tritium in water intended for human consumption. For the measurement of tritium concentrations within the limit defined by the legislation, the usual method is the Liquid Scintillation Counting technique, which can take up to 3 days from the sample collection till the result. Moreover, a real-time tritium low activity concentration measurement can be used as a nuclear power plant environmental surveillance and anomaly pre-alert system, for example, in the case of primary coolant leak. The goal of the present Thesis is to develop an innovative solution in order to address the lack of efficient solutions for real time detection of low tritium concentration in water. It is clear the important contribution of the developments, implementations and studies presented in the present thesis document, not only for the scientific contribution for the state of the art, but also to ensure the quality of the water for human consumption and for agriculture. So, it is clear to me its importance for the field, the motivation of the Author and the pertinence of the subject.

**Valoració de la metodologia utilitzada segons els objectius proposats. / Valoración de la metodología utilizada según los objetivos propuestos. / Assessment of the methodology used according to the objectives proposed:**

The experimental and simulation methodologies used in the different proposed solutions are very well established and explained, presenting a high detail of the physical phenomena and technical aspects in the different studied contexts. In my opinion, the used methodologies were adequate and have contributed for the quality of the obtained results and for the proposed thesis goals.

**Interès dels resultats obtinguts. / Interés de los resultados obtenidos. / Relevance of the findings:**

The results were obtained through very well defined methodologies, resulting in a set of very valuable information for the scientific community, showing, at the same time, the high potential of the implemented solution in the direction to achieve the goal defined by the E.U. Council Directive 2013/51/Euratom.

**Característiques formals de la memòria. / Características formales de la memoria. / Formal characteristics:**

The distribution of the contents throughout the document is well organized with the relevant theoretical contents followed by the practical and simulation work in a logic sequence. The document is very well written, with high clarity, allowing a fluid reading and a good understanding of the contents. It presents a good layout, with very clear figures and formula. Also, a correct scientific language is always present throughout the document.

**S'APROVA LA DEFENSA / SE APRUEBA LA DEFENSA / APPROVAL OF DEFENSE:**

Sí / Sí / Yes

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