



## University of Rijeka, Faculty of Maritime studies

**PROJECT ACRONYM AND TITLE:** Failure analysis of materials in marine environment

**FUNDING PROGRAMME:** University of Rijeka

**PERSON RESPONSIBLE:** Goran Vukelić

### FINANCIAL DATA

Project total cost	Overall funding assigned to PFRI
31.179,29 EUR	31.179,29 EUR

### SUMMARY

Project is intended to study the failure of traditional and modern materials used in production of structures (ships and offshore objects) exposed to marine environmental effects using a combination of experimental and numerical analyses.

Materials that are to be examined are traditional in shipbuilding (mostly steel) and modern (mostly glass fiber reinforced composites). Experiments will be performed to determine properties and collect data for further analysis. Mechanical tests and failure analysis will be performed using standardized specimens exposed to sea air, fresh water, sea water, polluted sea water, oily mixtures, ballast waters, ballast sediments and compared with results of specimens unaffected by marine environment. Failure analysis will be performed using optical and scanning electron microscopy to determine manufacturing defects and to identify failure modes.

Numerical research will employ finite element analysis (FEA) to numerically model previously mentioned experiments involving multiscale effects. Results will be compared to validate numerical analysis so that further numerical models can be developed and costs of pure experimental research kept down. FEA results will help to understand the failure mechanisms of composites.

Obtained results will be compared to available analytical solutions. Programmed algorithms are going to be developed to predict the properties of materials and to analyze experimentally obtained data.

Project results are going to improve knowledge about the behavior and failure of materials exposed to marine environment. Results are going to be useful for transfer to full-scale examples and for the optimization of marine structures.

Start date	End date
07.03.2019.	31.12.2023.

### PARTNERSHIP

Br.	Partner organization	Country	Role
1.	Faculty of Maritime Studies Rijeka	Croatia	Lead partner
2.	EPF-Ecoles d'Ingénieurs Sceaux	France	Partner



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3.	Faculty of Engineering Rijeka	Croatia	Partner
4.	University of Zadar, Maritime Department	Croatia	Partner
5.	Shipyard 3. Maj Rijeka	Croatia	Partner
6.	Shipyard Viktor Lenac Rijeka	Croatia	Partner

**WEBSITE:** -

**ADDITIONAL INFO:**

Project team members:

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