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*Dr. Marlon Lewis – working  
with the future of oceanography*

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# CRUSTY CLARIFICATION

A detailed benchmark of the oceanic crust's generation and make-up will be the result of Dr. Mladen Nedimović's ambitious data collection voyage. It will take at least three years to process and interpret the massive amount of data but it will be worth the wait. The information is of great importance as it provides the most detailed insight yet into the Earth's oceanic crust, the part of Earth's surface that resides underneath deep ocean.

"Oceanic crust has a huge presence on the Earth's surface, double the amount of the continental crust (land), but its location makes it challenging and expensive to study," says Nedimović, Dalhousie's Canada Research Chair in Geophysics and Petroleum Exploration. "The crustal formation process is very complex and there is still much we don't know about it."

Nedimović and his colleagues collected data that will image in detail some 10,000 km<sup>3</sup> of the East Pacific Rise (southwest of Mexico), a fast spreading ridge. They used thousands of listening devices that captured seismic energy released every 50 metres along several thousand kilometres of ship track. The seismic equipment is used to construct an image of the subsurface.

○ *Dr. Mladen Nedimović*



**"Oceanic crust has a huge presence on the Earth's surface ... there is still much we don't know about it."**



"There are competing hypotheses about how the new thin but dense oceanic crust is formed. It may be formed by one type of molten rock (magma) found in a single melt lens centred on the ridge axis or it could be the result of several types of melts and magma lenses found at or near the ridge axis," says Nedimović.

The formed images will be so detailed that they will also provide insight into the relationship between the location of the magma lenses and surface phenomena such as volcanism, faulting, hydrothermal venting, and the unique biological communities that thrive around these vents.

"Just as it may help to answer questions, it will undoubtedly generate even more questions. That's the beauty of basic science research."

Nedimović is co-principal investigator on this \$20 million research project funded by the United States National Science Foundation. ■

