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## Energy and Environment - Poster Display

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### Synthesis and Properties of Novel NiBAIN Nanocomposite Coatings

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Degradation of materials due to corrosion has now emerged as an international challenge which is compelling the community to trace out some smart solutions on priority basis. Corrosion mitigation is not only important as it results in wastage of our natural resources, time, money and efforts, but more importantly its inadequate handling may lead to the safety threats. Some, such sad incidents have been reported in the past. That is why many countries of the world are paying special attention to address this challenge by investing a lot of money. Although, we can notice corrosion everywhere around us, however, mining, mineral processing, oil & gas and many other processing industries are facing severe corrosion challenges. In many applications, it is only the surface of the material that is directly exposed to the corrosive medium, hence modifying the surface properties may lead to control the corrosion phenomenon. Towards this goal, the development of various types of nanocomposite coatings has proven to be an economic and viable option. The present research work addresses the synthesis and characterization of novel Ni-B-AIN nanocomposite coatings. The Ni-B and Ni-B-AIN nanocomposite coatings were electrodeposited on the mild substrate. A comparison of structural, surface, mechanical and electrochemical properties are presented to elucidate the beneficial role of the incorporation of AIN nanoparticles into the Ni-B matrix. We have noticed that the addition of AIN nanoparticles to Ni-B matrix has a remarkable effect on its properties. Ni-B-AIN nanocomposite coatings demonstrate superior

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structural, mechanical and anticorrosion properties when compared to Ni-B coatings which make them attractive for many industrial applications.