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## Artificial neural network for prediction of CuO reduction by low-temperature hydrogen plasma

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In this study, an artificial neural network is used to predict and model copper oxide reduction by plasma. By managing a learning process, the model provides the coherence of input and output parameters. Such a connection can be developed as an intelligent mechanism and helps decision-makers to modify the control parameters of the copper oxide reduction process. Due to the complexity and non-linear nature of the copper oxide reduction process by plasma, the artificial neural network (ANN) model is used to predict and calculate the rate of copper oxide reduction versus the variation of the operational parameter. The number of layers and neurons in the neural network structure are optimized. We concluded that among different structures, the back-propagated error neural network with the log-sigmoid activation function is the best structure. Simulation results show that the artificial neural network model is an authentic predictive model to study copper oxide reduction by hydrogen plasma.

### Biography

Hajizadeh Kobra is a PhD student of Kharazmi University-Plasma Research Center. She is going to defend her thesis on Plasam-Medicine field in near future. She is a faculty member of Physics Department in Azad University-South Tehran Branch, and the Founder and Managing Director of PLAS-MED group of USERN (Universal Scientific Education and Research Network). She has published 7 books, 1 paper in reputed journals, 2 papers in Iranian journals and 7 presentations in national and international conferences. She has been awarded for more than 10 times as outstanding researcher, including Iranian Physics Association Special Prize.

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