













**Figure 5.10:** Power of the node with Time

From Figure 5.10 which is the illustration of Power, No of nodes alive with respect to simulation-time of the network, we can observe that the power consumed is more in LEACH-C than all the other protocols. ERP performs better than other protocols in terms of power Since ERP protocol lets the power consumption of the network be uniformly distributed in each node, the interval between the deaths of the first node and that of the last node is so short. ERP degrades more slowly than other three protocols in most cases and afterwards it will decrease sharply.

## 6. Conclusion

In the proposed Efficient Routing Protocol (ERP) for sensor networks, a node independently makes its decision whether or not to compete as a cluster head. After the selection of the cluster heads, the non-cluster head nodes choose to join the closest cluster head and for a cluster. In order to reduce the power consumption, a cluster head, called the base station, is selected from among the other cluster heads as the only node to communicate with the sink node. The cluster head remote from the sink node sends the gathered data, in a multi-hop pattern, to the sink node. Moreover, in ERP protocol, the execution of a simple coverage algorithm helps to prolong the network lifetime with the increase in node density.

## References

- [1] Stojmenovic. The state of the art of sensor network. John wali and sensor.2005
- [2] M. Adamou, S. Khanna, I. Lee, I. Shin, S. Zhou, Fair Real-Time Traffic Scheduling over A Wireless LAN, In Proceedings of the 22nd IEEE RTSS 2001, London, UK, December 3-6, 2001
- [3] W. Heinzelman, A. Chandrakasan and H. Balakrishnan, Energy- Efficient Communication Protocol for Wireless Microsensor Networks, In HICSS, 2000.
- [4] S. Corson and J. Macker, "Routing Protocol Performance Issues and Evaluation Considerations," Naval Research Laboratory, 2010
- [5] F. Ye, A. Chen, S. Liu, L. Zhang, "A scalable solution to minimum cost forwarding in large sensor

networks", Proceedings of the tenth International Conference on Computer communications and Networks, 2001.

- [6] W. Heinzelman, J. Kulik, and H. Balakrishnan, "Adaptive Protocols for Information Dissemination in Wireless Sensor Networks," Proc. 5th ACM/IEEE Mobicom Conference, 2005,
- [7] Intanagonwiwat, R. Govindan, and D. Estrin, "Directed diffusion: a scalable and robust communication paradigm for sensor networks," Proceedings of ACM MobiCom2008
- [8] D. Braginsky and D. Estrin, "Rumor Routing Algorithm for Sensor Networks," in the Proceedings of the First Workshop on Sensor Networks and Applications (WSNA), 2010
- [9] C.Schurgers and M.B. Srivastava, "Energy efficient routing in wireless sensor networks", in the MILCOM Proceedings on Communications for Network-Centric Operations: Creating the Information Force, 2010.
- [10] [www.isi.edu/nsnam](http://www.isi.edu/nsnam)